

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)
(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch

I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. CIVIL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Admitted From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | CE302ES | Strength of Materials - I | 4 | 1 | 0 | 4 |
| 3 | CE303ES | Fluid Mechanics - I | 4 | 1 | 0 | 4 |
| 4 | CE304ES | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 5 | CE305ES | Surveying | 3 | 0 | 0 | 3 |
| 6 | CE306ES | Strength of Material Lab | 0 | 0 | 3 | 2 |
| 7 | CE307ES | Computer Aided Drafting Lab | 0 | 0 | 3 | 2 |
| 8 | CE308ES | Surveying Lab - I | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 3 | 12 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE401ES | Strength of Material - II | 4 | 1 | 0 | 4 |
| 2 | CE402ES | Fluid Mechanics - II | 4 | 1 | 0 | 4 |
| 3 | CE403ES | Structural Analysis | 4 | 1 | 0 | 4 |
| 4 | CV404ES | Engineering Geology | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CE406ES | Fluid Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE408ES | Surveying Lab - II | 0 | 0 | 3 | 2 |
| 8 | CV407ES | Engineering Geology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |


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III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE501PC | Concrete Technology | 4 | 0 | 0 | 4 |
| 2 | CE502PC | Design of Reinforced Concrete Structures | 4 | 1 | 0 | 4 |
| 3 | CE503PC | Water Resources Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 6 | CE505PC | Concrete Technology Lab | 0 | 0 | 3 | 2 |
| 7 | CE506PC | Geographical Information Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CE507PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 2 |
| 9 | MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Design of Steel Structures | 4 | 1 | 0 | 4 |
| 2 | CE602PC | Environmental Engineering | 4 | 0 | 0 | 4 |
| 3 | CE603PC | Soil Mechanics | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CE604PC | Soil Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE605PC | Computer Aided Drafting - II Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CE701PC | Transportation Engineering | 4 | 0 | 0 | 4 |
| 2 | CE702PC | Estimation Quantity Surveying and Valuation | 4 | 1 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective -IV | 3 | 0 | 0 | 3 |
| 6 | CE703PC | Transportation Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | CE704PC | Environmental Engineering Lab | 0 | 0 | 3 | 2 |
| 8 | CE705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |
| 9 | CE706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 1 | 11 | 24 |

IV YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|---|
| CE611PE | Air Pollution and Control. |
| CE612PE | Advanced Structural Analysis. |
| CE613PE | Ground Water Development and Management. |
| CE614PE | Earth and Rock fill Dams and Slope Stability. |

Professional Elective - II

| | |
|---------|--|
| CE721PE | Stochastic Hydrology. |
| CE722PE | Construction Technology and Management. |
| CE723PE | Foundation Engineering. |
| CE724PE | Rehabilitation and Retrofitting of Structures. |

Professional Elective - III

| | |
|---------|----------------------------------|
| CE731PE | Watershed Management. |
| CE732PE | Prestressed Concrete. |
| CE733PE | Ground Improvement Techniques. |
| CE734PE | Railway and Airport Engineering. |

Professional Elective - IV

| | |
|---------|---------------------------------------|
| CE741PE | Traffic Engineering. |
| CE742PE | Bridge Engineering. |
| CE743PE | Soil Dynamics and Machine Foundation. |
| CE744PE | Irrigation and Hydraulic Structures. |

Professional Elective - V

| | |
|---------|-------------------------------------|
| CE851PE | Waste Management. |
| CE852PE | Pavement Design. |
| CE853PE | Elements of Earthquake Engineering. |
| CE854PE | Water Resources Systems Analysis. |

Professional Elective - VI

| | |
|---------|---|
| CE861PE | Finite Element Methods for Civil Engineering. |
| CE862PE | Geoenvironmental Engineering. |
| CE863PE | Design and Drawing of Irrigation Structures. |
| CE864PE | Industrial Waste Water Treatment. |

*Open Elective subjects' syllabus is provided in a separate document.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

L T/P/D C

0 0/3/0 2

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.


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UNIT-III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad, Telangana State** in the year 2015.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. *Seeing like a Feminist*. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>

MC400ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.


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Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

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3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V

Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases : Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|-----------|----------|----------|-----------|
| 1 | CE301PC | Surveying and Geomatics | 3 | 0 | 0 | 3 |
| 2 | CE302PC | Engineering Geology | 2 | 0 | 0 | 2 |
| 3 | CE303PC | Strength of Materials - I | 3 | 1 | 0 | 4 |
| 4 | MA304BS | Probability and Statistics | 3 | 1 | 0 | 4 |
| 5 | CE305PC | Fluid Mechanics | 3 | 1 | 0 | 4 |
| 6 | CE306PC | Surveying Lab | 0 | 0 | 3 | 1.5 |
| 7 | CE307PC | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE308PC | Engineering Geology Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 17 | 3 | 8 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|-----------|-----------|
| 2 | CE402ES | Basic Mechanical Engineering for Civil Engineers | 2 | 0 | 0 | 2 |
| 3 | CE403PC | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 4 | CE404PC | Strength of Materials - II | 3 | 0 | 0 | 3 |
| 5 | CE405PC | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 6 | CE406PC | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 7 | CE407PC | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 8 | CE409PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 17 | 0 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 4 | CE501 | Structural Analysis-II | 3 | 0 | 0 | 3 |
| 2 | CE502PC | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3 | CE503PC | Structural Engineering -I (RCC) | 3 | 1 | 0 | 4 |
| 4 | CE504PC | Transportation Engineering | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | SM505MS | Engineering Economics and Accountancy | 2 | 0 | 0 | 2 |
| 7 | CE506PC | Highway Engineering and Concrete Technology Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE507PC | Geotechnical Engineering Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC509 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 20 | 1 | 8 | 22 |


III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 1 | CE602PC | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2 | CE603PC | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3 | CE604PC | Structural Engineering -II (Steel) | 3 | 1 | 0 | 4 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 7 | CE605PC | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | CE606PC | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 4 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | CE701PC | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | | Professional Elective -III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -IV | 3 | 0 | 0 | 3 |


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|---|---------|---|-----------|----------|-----------|-----------|
| 4 | | Open Elective -II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | CE703PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | CE704PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | CE705PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 1 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective -III | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Project Stage-II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

| | |
|---------|----------------------|
| CE511PE | Concrete Technology |
| CE512PE | Theory of Elasticity |
| CE513PE | Rock Mechanics |

Professional Elective – II

| | |
|---------|-------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earth Quake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Remote Sensing & GIS |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Advanced Structural Design |

Professional Elective -IV


| | |
|---------|-------------------------------------|
| CE721PE | Irrigation and Hydraulic Structures |
| CE722PE | Pipeline Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---------------------------------|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|--|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Urban Transportation Planning |
| CE823PE | Finite Element Methods for Civil Engineering |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

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Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: CONSTITUTION OF INDIA**

B.Tech. II Year I Sem.

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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male. First lessons in Caste.


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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life"

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*
- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

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UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

L T/P/D C
3 0/0/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

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economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|-----------|----------|----------|-----------|
| 1 | CE301PC | Surveying and Geomatics | 3 | 0 | 0 | 3 |
| 2 | CE302PC | Engineering Geology | 2 | 0 | 0 | 2 |
| 3 | CE303PC | Strength of Materials - I | 3 | 1 | 0 | 4 |
| 4 | MA304BS | Probability and Statistics | 3 | 1 | 0 | 4 |
| 5 | CE305PC | Fluid Mechanics | 3 | 1 | 0 | 4 |
| 6 | CE306PC | Surveying Lab | 0 | 0 | 3 | 1.5 |
| 7 | CE307PC | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE308PC | Engineering Geology Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 17 | 3 | 8 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|-----------|-----------|
| 2 | CE402ES | Basic Mechanical Engineering for Civil Engineers | 2 | 0 | 0 | 2 |
| 3 | CE403PC | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 4 | CE404PC | Strength of Materials - II | 3 | 0 | 0 | 3 |
| 5 | CE405PC | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 6 | CE406PC | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 7 | CE407PC | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 8 | CE409PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 17 | 0 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 4 | CE501 | Structural Analysis-II | 3 | 0 | 0 | 3 |
| 2 | CE502PC | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3 | CE503PC | Structural Engineering -I (RCC) | 3 | 1 | 0 | 4 |
| 4 | CE504PC | Transportation Engineering | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | SM505MS | Engineering Economics and Accountancy | 2 | 0 | 0 | 2 |
| 7 | CE506PC | Highway Engineering and Concrete Technology Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE507PC | Geotechnical Engineering Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC509 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 20 | 1 | 8 | 22 |


III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 1 | CE602PC | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2 | CE603PC | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3 | CE604PC | Structural Engineering -II (Steel) | 3 | 1 | 0 | 4 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 7 | CE605PC | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | CE606PC | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 4 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | CE701PC | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | | Professional Elective -III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -IV | 3 | 0 | 0 | 3 |


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|---|---------|---|-----------|----------|-----------|-----------|
| 4 | | Open Elective -II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | CE703PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | CE704PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | CE705PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 1 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective -III | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Project Stage-II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

| | |
|---------|----------------------|
| CE511PE | Concrete Technology |
| CE512PE | Theory of Elasticity |
| CE513PE | Rock Mechanics |

Professional Elective – II

| | |
|---------|-------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earth Quake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Remote Sensing & GIS |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Advanced Structural Design |

Professional Elective -IV

| | |
|---------|-------------------------------------|
| CE721PE | Irrigation and Hydraulic Structures |
| CE722PE | Pipeline Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---------------------------------|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|--|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Urban Transportation Planning |
| CE823PE | Finite Element Methods for Civil Engineering |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: CONSTITUTION OF INDIA**

B.Tech. II Year I Sem.

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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male. First lessons in Caste.


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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life"

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*
- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

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|---|-------|---|
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UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

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3 0/0/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

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economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)
(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch

I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. CIVIL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Admitted From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | CE302ES | Strength of Materials - I | 4 | 1 | 0 | 4 |
| 3 | CE303ES | Fluid Mechanics - I | 4 | 1 | 0 | 4 |
| 4 | CE304ES | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 5 | CE305ES | Surveying | 3 | 0 | 0 | 3 |
| 6 | CE306ES | Strength of Material Lab | 0 | 0 | 3 | 2 |
| 7 | CE307ES | Computer Aided Drafting Lab | 0 | 0 | 3 | 2 |
| 8 | CE308ES | Surveying Lab - I | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 3 | 12 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE401ES | Strength of Material - II | 4 | 1 | 0 | 4 |
| 2 | CE402ES | Fluid Mechanics - II | 4 | 1 | 0 | 4 |
| 3 | CE403ES | Structural Analysis | 4 | 1 | 0 | 4 |
| 4 | CV404ES | Engineering Geology | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CE406ES | Fluid Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE408ES | Surveying Lab - II | 0 | 0 | 3 | 2 |
| 8 | CV407ES | Engineering Geology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |


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III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE501PC | Concrete Technology | 4 | 0 | 0 | 4 |
| 2 | CE502PC | Design of Reinforced Concrete Structures | 4 | 1 | 0 | 4 |
| 3 | CE503PC | Water Resources Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 6 | CE505PC | Concrete Technology Lab | 0 | 0 | 3 | 2 |
| 7 | CE506PC | Geographical Information Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CE507PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 2 |
| 9 | MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Design of Steel Structures | 4 | 1 | 0 | 4 |
| 2 | CE602PC | Environmental Engineering | 4 | 0 | 0 | 4 |
| 3 | CE603PC | Soil Mechanics | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CE604PC | Soil Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE605PC | Computer Aided Drafting - II Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*During Sumer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CE701PC | Transportation Engineering | 4 | 0 | 0 | 4 |
| 2 | CE702PC | Estimation Quantity Surveying and Valuation | 4 | 1 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective -IV | 3 | 0 | 0 | 3 |
| 6 | CE703PC | Transportation Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | CE704PC | Environmental Engineering Lab | 0 | 0 | 3 | 2 |
| 8 | CE705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |
| 9 | CE706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 1 | 11 | 24 |

IV YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|---|
| CE611PE | Air Pollution and Control. |
| CE612PE | Advanced Structural Analysis. |
| CE613PE | Ground Water Development and Management. |
| CE614PE | Earth and Rock fill Dams and Slope Stability. |

Professional Elective - II

| | |
|---------|--|
| CE721PE | Stochastic Hydrology. |
| CE722PE | Construction Technology and Management. |
| CE723PE | Foundation Engineering. |
| CE724PE | Rehabilitation and Retrofitting of Structures. |

Professional Elective - III

| | |
|---------|----------------------------------|
| CE731PE | Watershed Management. |
| CE732PE | Prestressed Concrete. |
| CE733PE | Ground Improvement Techniques. |
| CE734PE | Railway and Airport Engineering. |

Professional Elective - IV

| | |
|---------|---------------------------------------|
| CE741PE | Traffic Engineering. |
| CE742PE | Bridge Engineering. |
| CE743PE | Soil Dynamics and Machine Foundation. |
| CE744PE | Irrigation and Hydraulic Structures. |

Professional Elective - V

| | |
|---------|-------------------------------------|
| CE851PE | Waste Management. |
| CE852PE | Pavement Design. |
| CE853PE | Elements of Earthquake Engineering. |
| CE854PE | Water Resources Systems Analysis. |

Professional Elective - VI

| | |
|---------|---|
| CE861PE | Finite Element Methods for Civil Engineering. |
| CE862PE | Geoenvironmental Engineering. |
| CE863PE | Design and Drawing of Irrigation Structures. |
| CE864PE | Industrial Waste Water Treatment. |

*Open Elective subjects' syllabus is provided in a separate document.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

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Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.


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UNIT-III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad, Telangana State** in the year 2015.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. *Seeing like a Feminist*. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>

MC400ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.


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Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T/P/D C
3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.


UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V

Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.


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TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases : Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)
(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch

I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. CIVIL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Admitted From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | CE302ES | Strength of Materials - I | 4 | 1 | 0 | 4 |
| 3 | CE303ES | Fluid Mechanics - I | 4 | 1 | 0 | 4 |
| 4 | CE304ES | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 5 | CE305ES | Surveying | 3 | 0 | 0 | 3 |
| 6 | CE306ES | Strength of Material Lab | 0 | 0 | 3 | 2 |
| 7 | CE307ES | Computer Aided Drafting Lab | 0 | 0 | 3 | 2 |
| 8 | CE308ES | Surveying Lab - I | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 3 | 12 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE401ES | Strength of Material - II | 4 | 1 | 0 | 4 |
| 2 | CE402ES | Fluid Mechanics - II | 4 | 1 | 0 | 4 |
| 3 | CE403ES | Structural Analysis | 4 | 1 | 0 | 4 |
| 4 | CV404ES | Engineering Geology | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CE406ES | Fluid Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE408ES | Surveying Lab - II | 0 | 0 | 3 | 2 |
| 8 | CV407ES | Engineering Geology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |


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III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CE501PC | Concrete Technology | 4 | 0 | 0 | 4 |
| 2 | CE502PC | Design of Reinforced Concrete Structures | 4 | 1 | 0 | 4 |
| 3 | CE503PC | Water Resources Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 6 | CE505PC | Concrete Technology Lab | 0 | 0 | 3 | 2 |
| 7 | CE506PC | Geographical Information Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CE507PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 2 |
| 9 | MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Design of Steel Structures | 4 | 1 | 0 | 4 |
| 2 | CE602PC | Environmental Engineering | 4 | 0 | 0 | 4 |
| 3 | CE603PC | Soil Mechanics | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CE604PC | Soil Mechanics Lab | 0 | 0 | 3 | 2 |
| 7 | CE605PC | Computer Aided Drafting - II Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*During Sumer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CE701PC | Transportation Engineering | 4 | 0 | 0 | 4 |
| 2 | CE702PC | Estimation Quantity Surveying and Valuation | 4 | 1 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective -IV | 3 | 0 | 0 | 3 |
| 6 | CE703PC | Transportation Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | CE704PC | Environmental Engineering Lab | 0 | 0 | 3 | 2 |
| 8 | CE705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |
| 9 | CE706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 1 | 11 | 24 |

IV YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|---|
| CE611PE | Air Pollution and Control. |
| CE612PE | Advanced Structural Analysis. |
| CE613PE | Ground Water Development and Management. |
| CE614PE | Earth and Rock fill Dams and Slope Stability. |

Professional Elective - II

| | |
|---------|--|
| CE721PE | Stochastic Hydrology. |
| CE722PE | Construction Technology and Management. |
| CE723PE | Foundation Engineering. |
| CE724PE | Rehabilitation and Retrofitting of Structures. |

Professional Elective - III

| | |
|---------|----------------------------------|
| CE731PE | Watershed Management. |
| CE732PE | Prestressed Concrete. |
| CE733PE | Ground Improvement Techniques. |
| CE734PE | Railway and Airport Engineering. |

Professional Elective - IV

| | |
|---------|---------------------------------------|
| CE741PE | Traffic Engineering. |
| CE742PE | Bridge Engineering. |
| CE743PE | Soil Dynamics and Machine Foundation. |
| CE744PE | Irrigation and Hydraulic Structures. |

Professional Elective - V

| | |
|---------|-------------------------------------|
| CE851PE | Waste Management. |
| CE852PE | Pavement Design. |
| CE853PE | Elements of Earthquake Engineering. |
| CE854PE | Water Resources Systems Analysis. |

Professional Elective - VI

| | |
|---------|---|
| CE861PE | Finite Element Methods for Civil Engineering. |
| CE862PE | Geoenvironmental Engineering. |
| CE863PE | Design and Drawing of Irrigation Structures. |
| CE864PE | Industrial Waste Water Treatment. |

*Open Elective subjects' syllabus is provided in a separate document.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

L T/P/D C

0 0/3/0 2

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.


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UNIT-III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad, Telangana State** in the year 2015.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. *Seeing like a Feminist*. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>

MC400ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.


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 Andullapurmel (M), R.R. Dist. HYD-501 274

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

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2. Environmental Studies by R. Rajagopalan, Oxford University Press.

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2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T/P/D C
3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V

Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases : Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|-----------|----------|----------|-----------|
| 1 | CE301PC | Surveying and Geomatics | 3 | 0 | 0 | 3 |
| 2 | CE302PC | Engineering Geology | 2 | 0 | 0 | 2 |
| 3 | CE303PC | Strength of Materials - I | 3 | 1 | 0 | 4 |
| 4 | MA304BS | Probability and Statistics | 3 | 1 | 0 | 4 |
| 5 | CE305PC | Fluid Mechanics | 3 | 1 | 0 | 4 |
| 6 | CE306PC | Surveying Lab | 0 | 0 | 3 | 1.5 |
| 7 | CE307PC | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE308PC | Engineering Geology Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 17 | 3 | 8 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

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| | | | | | | |
|----|---------|--|-----------|----------|-----------|-----------|
| 2 | CE402ES | Basic Mechanical Engineering for Civil Engineers | 2 | 0 | 0 | 2 |
| 3 | CE403PC | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 4 | CE404PC | Strength of Materials - II | 3 | 0 | 0 | 3 |
| 5 | CE405PC | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 6 | CE406PC | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 7 | CE407PC | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 8 | CE409PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 17 | 0 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 4 | CE501 | Structural Analysis-II | 3 | 0 | 0 | 3 |
| 2 | CE502PC | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3 | CE503PC | Structural Engineering -I (RCC) | 3 | 1 | 0 | 4 |
| 4 | CE504PC | Transportation Engineering | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | SM505MS | Engineering Economics and Accountancy | 2 | 0 | 0 | 2 |
| 7 | CE506PC | Highway Engineering and Concrete Technology Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE507PC | Geotechnical Engineering Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC509 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 20 | 1 | 8 | 22 |

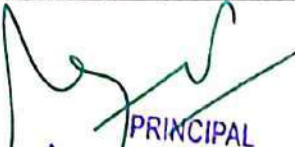
III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 1 | CE602PC | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2 | CE603PC | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3 | CE604PC | Structural Engineering -II (Steel) | 3 | 1 | 0 | 4 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 7 | CE605PC | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | CE606PC | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 4 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | CE701PC | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | | Professional Elective -III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -IV | 3 | 0 | 0 | 3 |


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| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 4 | | Open Elective -II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | CE703PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | CE704PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | CE705PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 1 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective -VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective -III | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Project Stage-II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

| | |
|---------|----------------------|
| CE511PE | Concrete Technology |
| CE512PE | Theory of Elasticity |
| CE513PE | Rock Mechanics |

Professional Elective – II

| | |
|---------|-------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earth Quake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Remote Sensing & GIS |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Advanced Structural Design |

Professional Elective -IV

| | |
|---------|-------------------------------------|
| CE721PE | Irrigation and Hydraulic Structures |
| CE722PE | Pipeline Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---------------------------------|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|--|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Urban Transportation Planning |
| CE823PE | Finite Element Methods for Civil Engineering |


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***MC309/*MC409: CONSTITUTION OF INDIA**

B.Tech. II Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male. First lessons in Caste.

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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life"

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*
- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

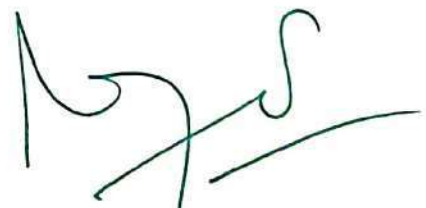
UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

L T/P/D C
3 0/0/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

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economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and Its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|-----------|----------|----------|-----------|
| 1 | CE301PC | Surveying and Geomatics | 3 | 0 | 0 | 3 |
| 2 | CE302PC | Engineering Geology | 2 | 0 | 0 | 2 |
| 3 | CE303PC | Strength of Materials - I | 3 | 1 | 0 | 4 |
| 4 | MA304BS | Probability and Statistics | 3 | 1 | 0 | 4 |
| 5 | CE305PC | Fluid Mechanics | 3 | 1 | 0 | 4 |
| 6 | CE306PC | Surveying Lab | 0 | 0 | 3 | 1.5 |
| 7 | CE307PC | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE308PC | Engineering Geology Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 17 | 3 | 8 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|-----------|-----------|
| 2 | CE402ES | Basic Mechanical Engineering for Civil Engineers | 2 | 0 | 0 | 2 |
| 3 | CE403PC | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 4 | CE404PC | Strength of Materials - II | 3 | 0 | 0 | 3 |
| 5 | CE405PC | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 6 | CE406PC | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 7 | CE407PC | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 8 | CE409PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 17 | 0 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 4 | CE501 | Structural Analysis-II | 3 | 0 | 0 | 3 |
| 2 | CE502PC | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3 | CE503PC | Structural Engineering -I (RCC) | 3 | 1 | 0 | 4 |
| 4 | CE504PC | Transportation Engineering | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | SM505MS | Engineering Economics and Accountancy | 2 | 0 | 0 | 2 |
| 7 | CE506PC | Highway Engineering and Concrete Technology Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE507PC | Geotechnical Engineering Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC509 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 20 | 1 | 8 | 22 |


III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 1 | CE602PC | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2 | CE603PC | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3 | CE604PC | Structural Engineering -II (Steel) | 3 | 1 | 0 | 4 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 7 | CE605PC | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | CE606PC | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 4 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | CE701PC | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | | Professional Elective -III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -IV | 3 | 0 | 0 | 3 |


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| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 4 | | Open Elective –II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | CE703PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | CE704PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | CE705PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 1 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective –VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective –III | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Project Stage-II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

| | |
|---------|----------------------|
| CE511PE | Concrete Technology |
| CE512PE | Theory of Elasticity |
| CE513PE | Rock Mechanics |

Professional Elective – II

| | |
|---------|-------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earth Quake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Remote Sensing & GIS |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Advanced Structural Design |

Professional Elective -IV

| | |
|---------|-------------------------------------|
| CE721PE | Irrigation and Hydraulic Structures |
| CE722PE | Pipeline Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---------------------------------|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|--|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Urban Transportation Planning |
| CE823PE | Finite Element Methods for Civil Engineering |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: CONSTITUTION OF INDIA**

B.Tech. II Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male. First lessons in Caste.


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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life"

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*
- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

L T/P/D C
3 0/0/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

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economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in CIVIL ENGINEERING
COURSE STRUCTURE, I & II YEAR SYLLABUS (R22 Regulations)
Applicable from AY 2022-23 Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1. | MA101BS | Matrices and Calculus | 3 | 1 | 0 | 4 |
| 2. | PH102BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3. | ME103ES | C Programming and Data Structures | 3 | 0 | 0 | 3 |
| 4. | ME104ES | Engineering Workshop | 0 | 1 | 3 | 2.5 |
| 5. | EN105HS | English for Skill Enhancement | 2 | 0 | 0 | 2 |
| 6. | CE106ES | Elements of Civil Engineering | 0 | 0 | 2 | 1 |
| 7. | PH107BS | Applied Physics Laboratory | 0 | 0 | 3 | 1.5 |
| 8. | ME108ES | C Programming and Data Structures Laboratory | 0 | 0 | 2 | 1 |
| 9. | EN109HS | English Language and Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 10. | *MC110 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total | 14 | 3 | 12 | 20 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1. | MA201BS | Ordinary Differential Equations and Vector Calculus | 3 | 1 | 0 | 4 |
| 2. | CH202BS | Engineering Chemistry | 3 | 1 | 0 | 4 |
| 3. | ME203ES | Computer Aided Engineering Graphics | 1 | 0 | 4 | 3 |
| 4. | CE204ES | Applied Mechanics | 3 | 0 | 0 | 3 |
| 5. | CE205PC | Surveying | 2 | 0 | 0 | 2 |
| 6. | CE206ES | Python Programming Laboratory | 0 | 1 | 2 | 2 |
| 7. | CH207BS | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 8. | CE208PC | Surveying Laboratory - I | 0 | 0 | 2 | 1 |
| | | Total | 12 | 3 | 10 | 20 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1. | | Probability and Statistics | 3 | 1 | 0 | 4 |
| 2. | | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 3. | | Engineering Geology | 3 | 0 | 0 | 3 |
| 4. | | Strength of Materials - I | 3 | 0 | 0 | 3 |
| 5. | | Fluid Mechanics | 3 | 0 | 0 | 3 |
| 6. | | Surveying Laboratory - II | 0 | 1 | 2 | 2 |
| 7. | | Strength of Materials Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Computer Aided Drafting Laboratory | 0 | 0 | 2 | 1 |
| 9. | *MC | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 6 | 20 |



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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1. | | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |
| 2. | | Concrete Technology | 3 | 0 | 0 | 3 |
| 3. | | Strength of Materials – II | 3 | 0 | 0 | 3 |
| 4. | | Hydraulics and Hydraulics Machinery | 3 | 0 | 0 | 3 |
| 5. | | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 6. | | Fluid Mechanics and Hydraulics Machinery Laboratory | 0 | 0 | 2 | 1 |
| 7. | | Basic Electrical and Electronics Engineering Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Concrete Technology Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Real-time Research Project/ Field-Based Project | 0 | 0 | 4 | 2 |
| 10. | *MC | Gender Sensitization Laboratory | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 0 | 12 | 20 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1. | | Structural Analysis - II | 3 | 0 | 0 | 3 |
| 2. | | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -I (RCC) | 3 | 0 | 0 | 3 |
| 4. | | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5. | | Transportation Engineering | 3 | 0 | 0 | 3 |
| 6. | | Water Resources Engineering - I | 3 | 0 | 0 | 3 |
| 7. | | Transportation Engineering Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Geotechnical Engineering Laboratory | 0 | 0 | 2 | 1 |
| 9. | *MC | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 4 | 20 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|-----------|-----------|
| 1. | | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2. | | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -II (Steel Structures) | 3 | 0 | 0 | 3 |
| 4. | | Professional Elective – I | 3 | 0 | 0 | 3 |
| 5. | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6. | | Environmental Engineering Laboratory | 0 | 0 | 2 | 1 |
| 7. | | Computer Aided Design Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Advanced English Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Industry Oriented Mini Project/ Internship | 0 | 0 | 4 | 2 |
| 10. | *MC | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 0 | 10 | 20 |

Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.



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IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------------------|-----------|----------|----------|-----------|
| 1. | | Quantity Survey & Valuation | 2 | 0 | 0 | 2 |
| 2. | | Project Management | 2 | 0 | 0 | 2 |
| 3. | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 4. | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5. | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 6. | | Open Elective - II | 3 | 0 | 0 | 3 |
| 7. | | Civil Engineering Software Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 16 | 0 | 8 | 20 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--------------------------------------|----------|----------|-----------|-----------|
| 1. | | Professional Elective – V | 3 | 0 | 0 | 3 |
| 2. | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 3. | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4. | | Project Stage – II including seminar | 0 | 0 | 22 | 11 |
| | | Total Credits | 9 | 0 | 22 | 20 |

*MC – Satisfactory/Unsatisfactory

Professional Elective – I

| | |
|---------|--|
| CE511PE | Green Building Technologies |
| CE512PE | Geomatic Applications in Civil Engineering |
| CE513PE | Smart Cities Planning and Management |

Professional Elective – II

| | |
|---------|------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earthquake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Earth Retaining Structures |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Stability Analysis of Slopes |

Professional Elective -IV

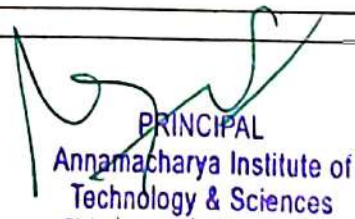
| | |
|---------|--------------------------------------|
| CE721PE | Design of Hydraulic Structures |
| CE722PE | Advanced Water Resources Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment for Civil Engineers |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|----------------------------------|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Pavement Asset Management |
| CE823PE | Pavement Analysis & Design |


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ENVIRONMENTAL SCIENCE

B.Tech. I Year I Sem.

L T P C
3 0 0 0

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan


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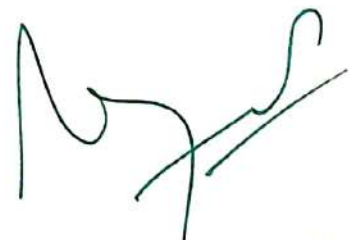
(EMP). Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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CONSTITUTION OF INDIA

B.Tech. II Year I Sem.

L T P C
3 0 0 0

Course Objectives: Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes: Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
- Discuss the passage of the Hindu Code Bill of 1956.

Unit - 1 History of Making of the Indian Constitution- History of Drafting Committee.

Unit - 2 Philosophy of the Indian Constitution- Preamble Salient Features

Unit - 3 Contours of Constitutional Rights & Duties - Fundamental Rights

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies
- Directive Principles of State Policy
- Fundamental Duties.

Unit - 4 Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions

Unit - 5 Local Administration: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Panchayat raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO Zila Panchayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy

Unit - 6 Election Commission: Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.

Suggested Reading:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.


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GENDER SENSITIZATION LABORATORY

B.Tech. II Year II Sem.

L T P C
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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

Unit-I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

Unit – II: GENDER ROLES AND RELATIONS


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Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles- Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

Unit – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

Unit – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No!-Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". Domestic Violence: Speaking Out/Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

Unit – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks- The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*

- ☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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1.3.1. Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

Response:

2018-19

| Category | Name of the Course | Relevance |
|--------------|----------------------------------|---|
| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab (MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |


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| <p style="text-align: center;">Intellectual</p> | <p style="text-align: center;">INTELLECTUAL PROPERTY RIGHTS(MC509)</p> | <ul style="list-style-type: none"> • To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights • To identify the significance of practice and procedure of Patents • To make the students to understand the statutory provisions of different forms of IPRs in simple forms. • To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design • To enable the students to keep their IP rights alive. |
| <p style="text-align: center;">Environment</p> | <p style="text-align: center;">ENVIRONMENTAL SCIENCE(MC609)</p> | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |
| <p style="text-align: center;">Gender</p> | <p style="text-align: center;">GENDER SENSITIZATION LAB (MC300HS)</p> | <ul style="list-style-type: none"> • To develop students' sensibility with regard to issues of gender in contemporary India. • To provide a critical perspective on the socialization of men and women. • To introduce students to information about some key biological aspects of genders. • To expose the students to debates on the politics and economics of work. • To help students reflect critically on gender violence. • To expose students to more egalitarian interactions between men and women. |

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| Environment | ENVIRONMENTAL SCIENCE AND TECHNOLOGY (MC400ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |

| File Description | Document |
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| Any Additional Information | <u>View Document</u> |


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2019-20

| Category | Name of the Course | Relevance |
|--------------|--------------------------------------|---|
| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab (MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC509) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |

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| Environment | ENVIRONMENTAL SCIENCE (MC609) | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |
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2020-21

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| Ethics | Professional Ethics (MC500HS) | • To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |
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| Any Additional Information | View Document |

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2021-22

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| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
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|--------------|--------------------------------------|---|
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC509) | <ul style="list-style-type: none"> • To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights • To identify the significance of practice and procedure of Patents • To make the students to understand the statutory provisions of different forms of IPRs in simple forms. • To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design • To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE (MC609) | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |

| File Description | Document |
|----------------------------|-------------------------------|
| Any Additional Information | View Document |


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 Abdullapurmet (M), R.R. Dist. HYD-501 512



College Code: T8
ESTD: 2005

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

Piglipur (V), Batasingaram (Post), Abdullapurmet(M), R R.Dist.,Hyderabad-501512.

(Approved by AICTE, Recognized by the GOVT.of T.S., Permanent Affiliation from JNTUH, Hyderabad.)

Accredited by "NAAC" with "B+" Grade, Recognized by UGC Under Section 2(f) and 12(B).

Mobile: 9848924705
9912344480

Website: aits-hyd.org
E-mail: principalaith@gmail.com

2022-23

| Category | Name of the Course | Relevance |
|--------------|-------------------------------|--|
| Environment | Environmental Science (MC110) | <input type="checkbox"/> • Understanding the importance of ecological balance for sustainable development. <input type="checkbox"/> • Understanding the impacts of developmental activities and mitigation measures. <input type="checkbox"/> • Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC) | • Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective. <input type="checkbox"/> • To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism. <input type="checkbox"/> • To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution. |

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E-mail: principalaith@gmail.com

| | | |
|--------------|---|---|
| Gender | GENDER SENSITIZATION LABORATORY (MC) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS(MC) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

| File Description | Document |
|----------------------------|-------------------------------|
| Any Additional Information | View Document |

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2018-19

R16 B.TECH CSE.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. COMPUTER SCIENCE AND ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|----------------------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Mathematics – IV | 4 | 1 | 0 | 4 |
| 2 | CS302ES | Data Structures through C++ | 4 | 0 | 0 | 4 |
| 3 | CS303ES | Mathematical Foundations of Computer Science | 4 | 0 | 0 | 4 |
| 4 | CS304ES | Digital Logic Design | 3 | 0 | 0 | 3 |
| 5 | CS305ES | Object Oriented Programming through Java | 3 | 0 | 0 | 3 |
| 6 | CS306ES | Data Structures through C++ Lab | 0 | 0 | 3 | 2 |
| 7 | CS307ES | IT Workshop | 0 | 0 | 3 | 2 |
| 8 | CS308ES | Object Oriented Programming through Java Lab | 0 | 0 | 3 | 2 |
| 9 | * MC300ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| Total Credits | | | 21 | 1 | 9 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|----------------------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CS401BS | Computer Organization | 4 | 0 | 0 | 4 |
| 2 | CS402ES | Database Management Systems | 4 | 0 | 0 | 4 |
| 3 | CS403ES | Operating Systems | 4 | 0 | 0 | 4 |
| 4 | CS404ES | Formal Languages and Automata Theory | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economics and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CS406ES | Computer Organization Lab | 0 | 0 | 3 | 2 |
| 7 | CS407ES | Database Management Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CS408ES | Operating Systems Lab | 0 | 0 | 3 | 2 |
| 9 | * MC400HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| Total Credits | | | 18 | 0 | 12 | 24 |

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III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Design and Analysis of Algorithms | 4 | 0 | 0 | 4 |
| 2 | CS502PC | Data Communication and Computer Networks | 4 | 0 | 0 | 4 |
| 3 | CS503PC | Software Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective –I | 3 | 0 | 0 | 3 |
| 6 | CS505PC | Design and Analysis of Algorithms Lab | 0 | 0 | 3 | 2 |
| 7 | CS506PC | Computer Networks Lab | 0 | 0 | 3 | 2 |
| 8 | CS507PC | Software Engineering Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS601PC | Compiler Design | 4 | 0 | 0 | 4 |
| 2 | CS602PC | Web Technologies | 4 | 0 | 0 | 4 |
| 3 | CS603PC | Cryptography and Network Security | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Cryptography and Network Security Lab | 0 | 0 | 3 | 2 |
| 7 | CS605PC | Web Technologies Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 0 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------------|---|---|---|---------|
| 1 | CS701PC | Data Mining | 4 | 0 | 0 | 4 |
| 2 | CS702PC | Principles of Programming Languages | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective – IV | 3 | 0 | 0 | 3 |
| 6 | CS703PC | Data Mining Lab | 0 | 0 | 3 | 2 |
| 7 | | PE-II Lab # | 0 | 0 | 3 | 2 |
| | CS751PC | Python Programming Lab | | | | |
| | CS752PC | Mobile Application Development Lab | | | | |

MC300ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

MC400HS: GENDER SENSITIZATION LAB

B.Tech. II Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 3 | 0 |

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT - II**GENDER AND BIOLOGY:****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.

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UNIT - III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

"My Mother doesn't Work" "Share the Load."

Women's Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-"I Fought for my Life...." - Additional Reading: The Caste Face of Violence.

UNIT - V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, "*Towards a World of Equals: A Bilingual Textbook on Gender*" written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad**, Telangana State in the year 2015.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. "I Fought For My Life...and Won." Available online at: <http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>

PROFESSIONAL ETHICS**B.Tech. III Year I Sem.****L T P C****Course Code: MC500HS****3 0 0 0**

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

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R16 B.TECH CSE.

UNIT - V

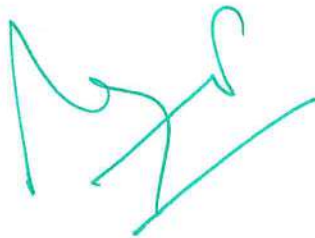
Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | CH102BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | EE103ES | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | ME105ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN105HS | English | 2 | 0 | 0 | 2 |
| 6 | CH106BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN107HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | EE108ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| | | Induction Programme | | | | |
| | | Total Credits | 12 | 2 | 10 | 19 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | AP202BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | CS203ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME204ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | AP205BS | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS206ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC209ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 13 | 3 | 10 | 18 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS301ES | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | CS302PC | Data Structures | 3 | 1 | 0 | 4 |
| 3 | MA303BS | Computer Oriented Statistical Methods | 3 | 1 | 0 | 4 |
| 4 | CS304PC | Computer Organization and Architecture | 3 | 0 | 0 | 3 |
| 5 | CS305PC | Object Oriented Programming using C++ | 2 | 0 | 0 | 2 |
| 6 | CS306ES | Analog and Digital Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | CS307PC | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS308PC | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | CS309PC | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 14 | 2 | 12 | 21 |


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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS401PC | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | SM402MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | CS403PC | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | CS404PC | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | CS405PC | Java Programming | 3 | 1 | 0 | 4 |
| 6 | CS406PC | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS407PC | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS408PC | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | *MC409 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Formal Languages & Automata Theory | 3 | 0 | 0 | 3 |
| 2 | CS502PC | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | CS503PC | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | CS504PC | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 7 | CS505PC | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS506PC | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 8 | 22 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | CS601PC | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | CS602PC | Compiler Design | 3 | 1 | 0 | 4 |
| 3 | CS603PC | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS605PC | Compiler Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------------|---|---|---|---------|
| 1 | CS701PC | Cryptography & Network Security | 3 | 0 | 0 | 3 |
| 2 | CS702PC | Data Mining | 2 | 0 | 0 | 2 |

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Andulapurmet (M), R.R. Dist. Guntur

MC109ES/*MC209ES: ENVIRONMENTAL SCIENCE*B.Tech. I Year II Sem.**

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

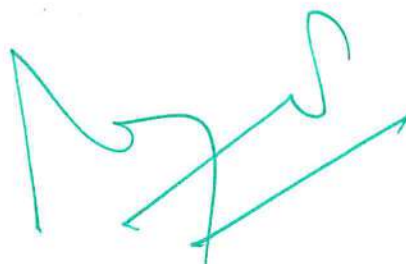
(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
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3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
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5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
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***MC309/*MC409: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.TECH II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*

- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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MC409/*MC309: CONSTITUTION OF INDIA*B.TECH II Year II Sem.**

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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC510: INTELLECTUAL PROPERTY RIGHTS**

III Year B.Tech. CSE I-Sem

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UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

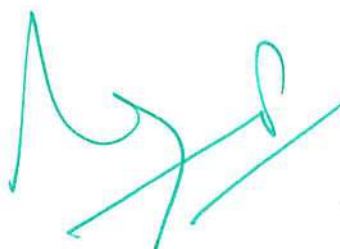
UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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MC609: ENVIRONMENTAL SCIENCE*III Year B.Tech. CSE II-Sem**

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Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

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2019-20

R18 B.Tech. CSE Syllabus

JNTU HYDERABAD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | CH102BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | EE103ES | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | ME105ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN105HS | English | 2 | 0 | 0 | 2 |
| 6 | CH106BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN107HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | EE108ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| | | Induction Programme | | | | |
| | | Total Credits | 12 | 2 | 10 | 19 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | AP202BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | CS203ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME204ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | AP205BS | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS206ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC209ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 13 | 3 | 10 | 18 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS301ES | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | CS302PC | Data Structures | 3 | 1 | 0 | 4 |
| 3 | MA303BS | Computer Oriented Statistical Methods | 3 | 1 | 0 | 4 |
| 4 | CS304PC | Computer Organization and Architecture | 3 | 0 | 0 | 3 |
| 5 | CS305PC | Object Oriented Programming using C++ | 2 | 0 | 0 | 2 |
| 6 | CS306ES | Analog and Digital Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | CS307PC | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS308PC | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | CS309PC | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 14 | 2 | 12 | 21 |

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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS401PC | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | SM402MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | CS403PC | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | CS404PC | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | CS405PC | Java Programming | 3 | 1 | 0 | 4 |
| 6 | CS406PC | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS407PC | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS408PC | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | *MC409 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Formal Languages & Automata Theory | 3 | 0 | 0 | 3 |
| 2 | CS502PC | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | CS503PC | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | CS504PC | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 7 | CS505PC | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS506PC | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 8 | 22 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | CS601PC | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | CS602PC | Compiler Design | 3 | 1 | 0 | 4 |
| 3 | CS603PC | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS605PC | Compiler Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------------|---|---|---|---------|
| 1 | CS701PC | Cryptography & Network Security | 3 | 0 | 0 | 3 |
| 2 | CS702PC | Data Mining | 2 | 0 | 0 | 2 |

***MC109ES/*MC209ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year II Sem.

| L | T | P | C |
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| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

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***MC309/*MC409: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.TECH II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT -I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles- Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life..."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

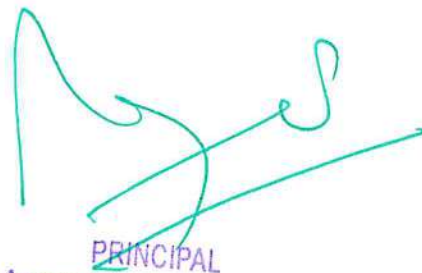
Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**

- ☞ **ESSENTIAL READING:** The Textbook, "*Towards a World of Equals: A Bilingual Textbook on Gender*" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%



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MC409/*MC309: CONSTITUTION OF INDIA*B.TECH II Year II Sem.****L T P C**
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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC510: INTELLECTUAL PROPERTY RIGHTS**

III Year B.Tech. CSE I-Sem

L T P C
3 0 0 0

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

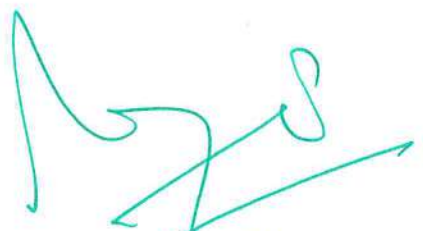
UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd


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MC609: ENVIRONMENTAL SCIENCE*III Year B.Tech. CSE II-Sem**

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.TECH. COMPUTER SCIENCE AND ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)**

Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Mathematics – IV | 4 | 1 | 0 | 4 |
| 2 | CS302ES | Data Structures through C++ | 4 | 0 | 0 | 4 |
| 3 | CS303ES | Mathematical Foundations of Computer Science | 4 | 0 | 0 | 4 |
| 4 | CS304ES | Digital Logic Design | 3 | 0 | 0 | 3 |
| 5 | CS305ES | Object Oriented Programming through Java | 3 | 0 | 0 | 3 |
| 6 | CS306ES | Data Structures through C++ Lab | 0 | 0 | 3 | 2 |
| 7 | CS307ES | IT Workshop | 0 | 0 | 3 | 2 |
| 8 | CS308ES | Object Oriented Programming through Java Lab | 0 | 0 | 3 | 2 |
| 9 | * MC300ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 9 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CS401BS | Computer Organization | 4 | 0 | 0 | 4 |
| 2 | CS402ES | Database Management Systems | 4 | 0 | 0 | 4 |
| 3 | CS403ES | Operating Systems | 4 | 0 | 0 | 4 |
| 4 | CS404ES | Formal Languages and Automata Theory | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economics and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CS406ES | Computer Organization Lab | 0 | 0 | 3 | 2 |
| 7 | CS407ES | Database Management Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CS408ES | Operating Systems Lab | 0 | 0 | 3 | 2 |
| 9 | * MC400HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 0 | 12 | 24 |

III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Design and Analysis of Algorithms | 4 | 0 | 0 | 4 |
| 2 | CS502PC | Data Communication and Computer Networks | 4 | 0 | 0 | 4 |
| 3 | CS503PC | Software Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 6 | CS505PC | Design and Analysis of Algorithms Lab | 0 | 0 | 3 | 2 |
| 7 | CS506PC | Computer Networks Lab | 0 | 0 | 3 | 2 |
| 8 | CS507PC | Software Engineering Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS601PC | Compiler Design | 4 | 0 | 0 | 4 |
| 2 | CS602PC | Web Technologies | 4 | 0 | 0 | 4 |
| 3 | CS603PC | Cryptography and Network Security | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Cryptography and Network Security Lab | 0 | 0 | 3 | 2 |
| 7 | CS605PC | Web Technologies Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 0 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------------|---|---|---|---------|
| 1 | CS701PC | Data Mining | 4 | 0 | 0 | 4 |
| 2 | CS702PC | Principles of Programming Languages | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 6 | CS703PC | Data Mining Lab | 0 | 0 | 3 | 2 |
| 7 | | PE-II Lab # | 0 | 0 | 3 | 2 |
| | CS751PC | Python Programming Lab | | | | |
| | CS752PC | Mobile Application Development Lab | | | | |

MC300ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year I Sem.

| | | | |
|---|---|---|---|
| L | T | P | C |
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

MC400HS: GENDER SENSITIZATION LAB

B.Tech. II Year II Sem.

| | | | |
|---|---|---|---|
| L | T | P | C |
| 0 | 0 | 3 | 0 |

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals: Unit -1*)**Socialization:** Making Women, Making Men (*Towards a World of Equals: Unit -2*)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT - II**GENDER AND BIOLOGY:****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals: Unit -4*)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals: Unit -10*)

Two or Many? Struggles with Discrimination.

PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T P C
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Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V

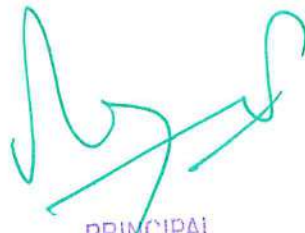
Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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2020-2021

R16 B.TECH CSE.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. COMPUTER SCIENCE AND ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Mathematics – IV | 4 | 1 | 0 | 4 |
| 2 | CS302ES | Data Structures through C++ | 4 | 0 | 0 | 4 |
| 3 | CS303ES | Mathematical Foundations of Computer Science | 4 | 0 | 0 | 4 |
| 4 | CS304ES | Digital Logic Design | 3 | 0 | 0 | 3 |
| 5 | CS305ES | Object Oriented Programming through Java | 3 | 0 | 0 | 3 |
| 6 | CS306ES | Data Structures through C++ Lab | 0 | 0 | 3 | 2 |
| 7 | CS307ES | IT Workshop | 0 | 0 | 3 | 2 |
| 8 | CS308ES | Object Oriented Programming through Java Lab | 0 | 0 | 3 | 2 |
| 9 | * MC300ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 9 | 24 |

II YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|-----------|-----------|
| 1 | CS401BS | Computer Organization | 4 | 0 | 0 | 4 |
| 2 | CS402ES | Database Management Systems | 4 | 0 | 0 | 4 |
| 3 | CS403ES | Operating Systems | 4 | 0 | 0 | 4 |
| 4 | CS404ES | Formal Languages and Automata Theory | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economics and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | CS406ES | Computer Organization Lab | 0 | 0 | 3 | 2 |
| 7 | CS407ES | Database Management Systems Lab | 0 | 0 | 3 | 2 |
| 8 | CS408ES | Operating Systems Lab | 0 | 0 | 3 | 2 |
| 9 | * MC400HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 0 | 12 | 24 |

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III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Design and Analysis of Algorithms | 4 | 0 | 0 | 4 |
| 2 | CS502PC | Data Communication and Computer Networks | 4 | 0 | 0 | 4 |
| 3 | CS503PC | Software Engineering | 4 | 0 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective –I | 3 | 0 | 0 | 3 |
| 6 | CS505PC | Design and Analysis of Algorithms Lab | 0 | 0 | 3 | 2 |
| 7 | CS506PC | Computer Networks Lab | 0 | 0 | 3 | 2 |
| 8 | CS507PC | Software Engineering Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS601PC | Compiler Design | 4 | 0 | 0 | 4 |
| 2 | CS602PC | Web Technologies | 4 | 0 | 0 | 4 |
| 3 | CS603PC | Cryptography and Network Security | 4 | 0 | 0 | 4 |
| 4 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Cryptography and Network Security Lab | 0 | 0 | 3 | 2 |
| 7 | CS605PC | Web Technologies Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 0 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------------|---|---|---|---------|
| 1 | CS701PC | Data Mining | 4 | 0 | 0 | 4 |
| 2 | CS702PC | Principles of Programming Languages | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective – IV | 3 | 0 | 0 | 3 |
| 6 | CS703PC | Data Mining Lab | 0 | 0 | 3 | 2 |
| 7 | | PE-II Lab # | 0 | 0 | 3 | 2 |
| | CS751PC | Python Programming Lab | | | | |
| | CS752PC | Mobile Application Development Lab | | | | |

MC300ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year I Sem.

L T P C
3 0 0 0

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.


UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

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of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

MC400HS: GENDER SENSITIZATION LAB

B.Tech. II Year II Sem.

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Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I

UNDERSTANDING GENDER

Gender: Why Should We Study It? (*Towards a World of Equals: Unit -1*)

Socialization: Making Women, Making Men (*Towards a World of Equals: Unit -2*)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT - II

GENDER AND BIOLOGY:

Missing Women: Sex Selection and Its Consequences (*Towards a World of Equals: Unit -4*)
Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals: Unit -10*)
Two or Many? Struggles with Discrimination.

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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

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Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V

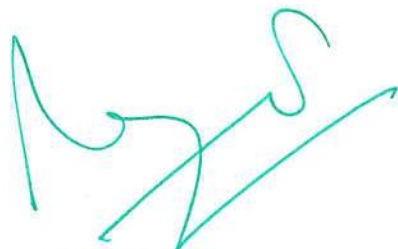
Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | CH102BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | EE103ES | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | ME105ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN105HS | English | 2 | 0 | 0 | 2 |
| 6 | CH106BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN107HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | EE108ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| | | Induction Programme | | | | |
| | | Total Credits | 12 | 2 | 10 | 19 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | AP202BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | CS203ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME204ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | AP205BS | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS206ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC209ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 13 | 3 | 10 | 18 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS301ES | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | CS302PC | Data Structures | 3 | 1 | 0 | 4 |
| 3 | MA303BS | Computer Oriented Statistical Methods | 3 | 1 | 0 | 4 |
| 4 | CS304PC | Computer Organization and Architecture | 3 | 0 | 0 | 3 |
| 5 | CS305PC | Object Oriented Programming using C++ | 2 | 0 | 0 | 2 |
| 6 | CS306ES | Analog and Digital Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | CS307PC | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS308PC | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | CS309PC | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 14 | 2 | 12 | 21 |

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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS401PC | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | SM402MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | CS403PC | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | CS404PC | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | CS405PC | Java Programming | 3 | 1 | 0 | 4 |
| 6 | CS406PC | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS407PC | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS408PC | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | *MC409 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Formal Languages & Automata Theory | 3 | 0 | 0 | 3 |
| 2 | CS502PC | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | CS503PC | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | CS504PC | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 7 | CS505PC | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS506PC | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 8 | 22 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | CS601PC | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | CS602PC | Compiler Design | 3 | 1 | 0 | 4 |
| 3 | CS603PC | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS605PC | Compiler Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------------|---|---|---|---------|
| 1 | CS701PC | Cryptography & Network Security | 3 | 0 | 0 | 3 |
| 2 | CS702PC | Data Mining | 2 | 0 | 0 | 2 |

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***MC109ES/*MC209ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

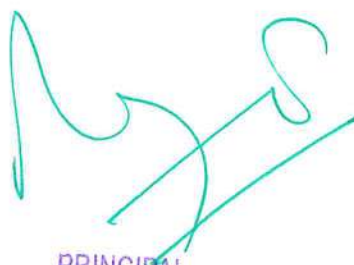
(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: GENDER SENSITIZATION LAB**
(An Activity-based Course)

B.TECH II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out/Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life..."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**

- ☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%



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MC409/*MC309: CONSTITUTION OF INDIA*B.TECH II Year II Sem.****L T P C**
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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC510: INTELLECTUAL PROPERTY RIGHTS**

III Year B.Tech. CSE I-Sem

L T P C
3 0 0 0**UNIT – I**

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law, copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd


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***MC609: ENVIRONMENTAL SCIENCE**

III Year B.Tech. CSE II-Sem

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|---|---|---|---|
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Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | CH102BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | EE103ES | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | ME105ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN105HS | English | 2 | 0 | 0 | 2 |
| 6 | CH106BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN107HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | EE108ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| | | Induction Programme | | | | |
| | | Total Credits | 12 | 2 | 10 | 19 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | AP202BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | CS203ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME204ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | AP205BS | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS206ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC209ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 13 | 3 | 10 | 18 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS301ES | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | CS302PC | Data Structures | 3 | 1 | 0 | 4 |
| 3 | MA303BS | Computer Oriented Statistical Methods | 3 | 1 | 0 | 4 |
| 4 | CS304PC | Computer Organization and Architecture | 3 | 0 | 0 | 3 |
| 5 | CS305PC | Object Oriented Programming using C++ | 2 | 0 | 0 | 2 |
| 6 | CS306ES | Analog and Digital Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | CS307PC | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS308PC | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | CS309PC | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 14 | 2 | 12 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS401PC | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | SM402MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | CS403PC | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | CS404PC | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | CS405PC | Java Programming | 3 | 1 | 0 | 4 |
| 6 | CS406PC | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS407PC | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS408PC | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | *MC409 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | CS501PC | Formal Languages & Automata Theory | 3 | 0 | 0 | 3 |
| 2 | CS502PC | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | CS503PC | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | CS504PC | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 7 | CS505PC | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS506PC | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 8 | 22 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | CS601PC | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | CS602PC | Compiler Design | 3 | 1 | 0 | 4 |
| 3 | CS603PC | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS605PC | Compiler Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------------|---|---|---|---------|
| 1 | CS701PC | Cryptography & Network Security | 3 | 0 | 0 | 3 |
| 2 | CS702PC | Data Mining | 2 | 0 | 0 | 2 |

***MC109ES/*MC209ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.TECH II Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male, First lessons in Caste.

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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles- Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences- Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks- The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**

- ☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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MC409/*MC309: CONSTITUTION OF INDIA*B.TECH II Year II Sem.****L T P C**
3 0 0 0

The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC510: INTELLECTUAL PROPERTY RIGHTS**

III Year B.Tech. CSE I-Sem

L T P C
3 0 0 0**UNIT – I**

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

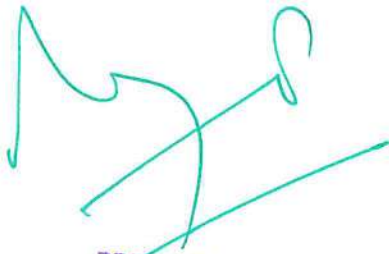
UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

III Year B.Tech. CSE II-Sem

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

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2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in COMPUTER SCIENCE AND ENGINEERING
COURSE STRUCTURE & SYLLABUS (R22 Regulations)

Applicable from AY 2022-23 Batch

I Year I Semester

| S. No. | Course Code | Course | L | T | P | Credits |
|--------------|-------------|--|-----------|----------|-----------|-----------|
| 1. | MA101BS | Matrices and Calculus | 3 | 1 | 0 | 4 |
| 2. | CH102BS | Engineering Chemistry | 3 | 1 | 0 | 4 |
| 3. | CS103ES | Programming for Problem Solving | 3 | 0 | 0 | 3 |
| 4. | EE104ES | Basic Electrical Engineering | 2 | 0 | 0 | 2 |
| 5. | ME105ES | Computer Aided Engineering Graphics | 1 | 0 | 4 | 3 |
| 6. | CS106ES | Elements of Computer Science & Engineering | 0 | 0 | 2 | 1 |
| 7. | CH107BS | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 8. | CS108ES | Programming for Problem Solving Laboratory | 0 | 0 | 2 | 1 |
| 9. | EE109ES | Basic Electrical Engineering Laboratory | 0 | 0 | 2 | 1 |
| | | Induction Program | | | | |
| Total | | | 12 | 2 | 12 | 20 |

I Year II Semester

| S. No. | Course Code | Course | L | T | P | Credits |
|--------------|-------------|--|-----------|----------|-----------|-----------|
| 1. | MA201BS | Ordinary Differential Equations and Vector Calculus | 3 | 1 | 0 | 4 |
| 2. | PH202BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3. | ME203ES | Engineering Workshop | 0 | 1 | 3 | 2.5 |
| 4. | EN204HS | English for Skill Enhancement | 2 | 0 | 0 | 2 |
| 5. | EC205ES | Electronic Devices and Circuits | 2 | 0 | 0 | 2 |
| 6. | CS206ES | Python Programming Laboratory | 0 | 1 | 2 | 2 |
| 7. | PH207BS | Applied Physics Laboratory | 0 | 0 | 3 | 1.5 |
| 8. | EN208HS | English Language and Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 9. | CS209ES | IT Workshop | 0 | 0 | 2 | 1 |
| 10. | *MC210 | Environmental Science | 3 | 0 | 0 | 0 |
| Total | | | 13 | 4 | 12 | 20 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS301PC | Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | CS302PC | Data Structures | 3 | 0 | 0 | 3 |
| 3 | CS303PC | Computer Oriented Statistical Methods | 3 | 1 | 0 | 4 |
| 4 | CS304PC | Computer Organization and Architecture | 3 | 0 | 0 | 3 |
| 5 | CS305PC | Object Oriented Programming through Java | 3 | 0 | 0 | 3 |
| 6 | CS306PC | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 7 | CS307PC | Object Oriented Programming through Java Lab | 0 | 0 | 3 | 1.5 |
| 8 | CS308PC | Data visualization- R Programming/ Power BI | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| Total | | | 15 | 1 | 10 | 20 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|--|-----------|----------|-----------|-----------|
| 1 | CS401PC | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | SM402MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | CS403PC | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | CS404PC | Database Management Systems | 3 | 0 | 0 | 3 |
| 5 | CS405PC | Software Engineering | 3 | 0 | 0 | 3 |
| 6 | CS406PC | Operating Systems Lab | 0 | 0 | 2 | 1 |
| 7 | CS407PC | Database Management Systems Lab | 0 | 0 | 2 | 1 |
| 8 | CS408PC | Real-time Research Project/ Societal Related Project | 0 | 0 | 4 | 2 |
| 9 | CS409PC | Node JS/ React JS/ Django | 0 | 0 | 2 | 1 |
| 10 | *MC410 | Constitution of India | 3 | 0 | 0 | 0 |
| Total | | | 18 | 0 | 10 | 20 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS501PC | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 2 | CS502PC | Computer Networks | 3 | 0 | 0 | 3 |
| 3 | CS503PC | DevOps | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | CS504PC | Computer Networks Lab | 0 | 0 | 2 | 1 |
| 7 | CS505PC | DevOps Lab | 0 | 0 | 2 | 1 |
| 8 | EN508HS | Advanced English Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | CS506PC: | UI design- Flutter | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| Total | | | 18 | 1 | 8 | 20 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|---|-----------|----------|----------|-----------|
| 1 | CS601PC | Machine Learning | 3 | 0 | 0 | 3 |
| 2 | CS602PC | Formal Languages and Automata Theory | 3 | 0 | 0 | 3 |
| 3 | CS603PC | Artificial Intelligence | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | CS604PC | Machine Learning Lab | 0 | 0 | 2 | 1 |
| 7 | CS605PC | Artificial Intelligence Laboratory | 0 | 0 | 2 | 1 |
| 8 | | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| 9 | CS606PC | Industrial Oriented Mini Project/ Internship/ Skill Development Course (Big data-Spark) | 0 | 0 | 4 | 2 |
| 10 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| Total | | | 18 | 0 | 8 | 20 |

Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.

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***MC210: ENVIRONMENTAL SCIENCE**

B.Tech. I Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition, Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

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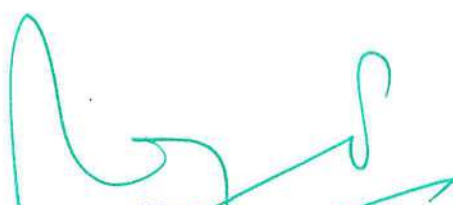
(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.


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MC309: GENDER SENSITIZATION LAB*B.Tech. II Year I Sem.****L T P C**
0 0 2 0**COURSE DESCRIPTION**

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

Unit-I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

Unit – II: GENDER ROLES AND RELATIONS

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Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

Unit – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

Unit – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No!-Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking OutIs Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

Unit – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**
- ◊ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhargubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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MC410: CONSTITUTION OF INDIA*B.Tech. II Year II Sem.****L T P C**
3 0 0 0**Course Objectives:** Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes: Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
- Discuss the passage of the Hindu Code Bill of 1956.

Unit - 1 History of Making of the Indian Constitution- History of Drafting Committee.**Unit - 2** Philosophy of the Indian Constitution- Preamble Salient Features**Unit - 3** Contours of Constitutional Rights & Duties - Fundamental Rights

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies
- Directive Principles of State Policy
- Fundamental Duties.

Unit - 4 Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions**Unit - 5** Local Administration: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Panchayat raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO ZilaPanchayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy**Unit - 6** Election Commission: Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.**Suggested Reading:**

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

L T P C
3 0 0 0**Course Objectives:**

- Significance of intellectual property and its protection
- Introduce various forms of intellectual property

Course Outcomes:

- Distinguish and Explain various forms of IPRs.
- Identify criteria to fit one's own intellectual work in particular form of IPRs.
- Apply statutory provisions to protect particular form of IPRs.
- Appraise new developments in IPR laws at national and international level

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copyrights: Fundamental of copyright law, originality of material, rights of reproduction, rights to perform the work publicly, copyright ownership issues, copyright registration, notice of copyright, International copyright law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secret law, determination of trade secret status, liability for misappropriations of trade secrets, protection for submission, trade secret litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law; copyright law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copyright law, international patent law, and international development in trade secrets law.

TEXT BOOK:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.

REFERENCE BOOK:

1. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.

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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

| | | | |
|---|---|---|---|
| L | T | P | C |
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition, Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

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(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
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2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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Accredited by "NAAC" with "A" Grade, Recognized by UGC Under Section 2(f) and 12(B).

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Website : aits-hyd.org
E-mail : principalaith@gmail.com
Fax : 08415-201688

1.3.1. Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

Response:

2018-19

| Category | Name of the Course | Relevance |
|-------------|---|--|
| Environment | Environmental Science and Technology (M300ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Gender | GENDER SENSITIZATION LAB (MC400HS) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women |
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |
| Environment | ENVIRONMENTAL SCIENCE (MC209ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations. |
| Gender | Gender Sensitization (MC309) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women. |

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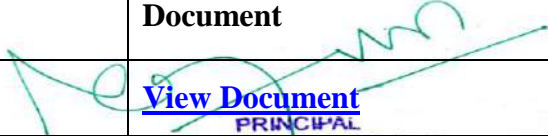
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| | | |
|---------------------|---|--|
| | | <ul style="list-style-type: none"> To introduce students to information about some key biological aspects of genders. To expose the students to debates on the politics and economics of work To help students reflect critically on gender violence To expose students to more egalitarian interactions between men and women |
| Constitution | CONSTITUTION OF INDIA (MC409) | <ul style="list-style-type: none"> The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Constitution of India is not |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS ((A60017) | <ul style="list-style-type: none"> To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights To identify the significance of practice and procedure of Patents To make the students to understand the statutory provisions of different forms of IPRs in simple forms. To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE (MC609) | <ul style="list-style-type: none"> Understanding the importance of ecological balance for sustainable development. Understanding the impacts of developmental activities and mitigation measures. Understanding the environmental policies and regulations. |

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| Any Additional Information |  View Document PRINCIPAL |



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2019-20

| Category | Name of the Course | Relevance |
|--------------|----------------------------------|--|
| Environment | Environmental Science (MC209ES) | <ul style="list-style-type: none">Understanding the importance of ecological balance for sustainable development.Understanding the impacts of developmental activities and mitigation measures.Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC309) | <ul style="list-style-type: none">To develop students' sensibility with regard to issues of gender in contemporary India.To provide a critical perspective on the socialization of men and women.To introduce students to information about some key biological aspects of genders.To expose the students to debates on the politics and economics of workTo help students reflect critically on gender violenceTo expose students to more egalitarian interactions between men and women |
| Constitution | CONSTITUTION OF INDIA (MC409) | <ul style="list-style-type: none">The Constitution of India is the supreme law of India.Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.The Constitution of India is not |

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|---------------------|---|--|
| | | only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC510) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC609) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
| Environment | ENVIRONMENTAL SCIENCE AND TECHNOLOGY (MC300ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |


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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

Piglipur, Batasingaram Panchayath, Hayath Nagar Mandal, Hyderabad, R.R. Dist. 501 512.
(Approved by AICTE, Recognized by the GOVT. of T.S., Permanent Affiliation from JNTUH, Hyderabad.)
Accredited by "NAAC" with "A" Grade, Recognized by UGC Under Section 2(f) and 12(B).

Phone : 08415-201689 (O)
Mobile : 9848924705

Website : aits-hyd.org
E-mail : principalaiith@gmail.com
Fax : 08415-201688

| | | |
|---------------|---|--|
| Gender | GENDER SENSITIZATION LAB (MC400HS) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India• To provide a critical perspective on the socialization of men and women• To introduce students to information about some key biological aspects of genders• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women |
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |

| File Description | Document |
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| Any Additional Information | View Document |


PRINCIPAL
Annamacharya Institute of
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Piglipur (V), Batasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-501 512



College Code : T8
ESTD: 2005

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2020-21

| Category | Name of the Course | Relevance |
|-------------|--|--|
| Environment | Environmental Science and Technology (MC300ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC400HS) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence• To expose students to more egalitarian interactions between men and women |


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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

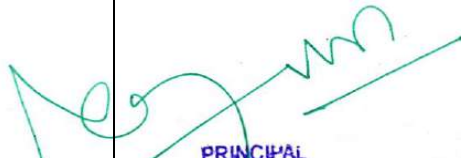
Piglipur, Batasingaram Panchayath, Hayath Nagar Mandal, Hyderabad, R.R. Dist. 501 512.
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| | | |
|---------------|--|---|
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |
|---------------|--|---|

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|--------------------|---|--|
| Environment | ENVIRONMENTAL SCIENCE(MC209ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
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| Gender | GENDER SENSITIZATION LAB (MC309)  PRINCIPAL Annamacharya Institute of Technology & Sciences Piglipur (V), Batasingaram (Post) Abdullapurmet (M), R.R. Dist. HYD-501 512 | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India• To provide a critical perspective on the socialization of men and women• To introduce students to information about some key biological aspects of genders• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women |
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E-mail : principalaith@gmail.com
Fax : 08415-201688

| | | |
|---------------------|---|--|
| Constitution | CONSTITUTION OF INDIA (MC409) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. <p>The Constitution of India is not</p> |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC510) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC609ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

| File Description | Document |
|----------------------------|-------------------------------|
| Any Additional Information | View Document |

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ESTD: 2005

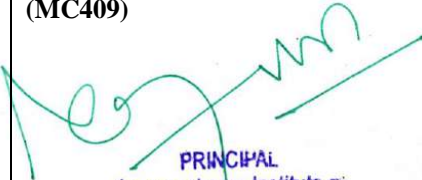
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2021-22

| Category | Name of the Course | Relevance |
|--------------|---|--|
| Environment | Environmental Science (MC209ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC309) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence• To expose students to more egalitarian interactions between men and women |
| Constitution | CONSTITUTION OF INDIA (MC409)  PRINCIPAL Annamacharya Institute of Technology & Sciences Piglipur (V), Batasingaram (Post) Abdullapurmet (M), R.R. Dist. MYD-501 512 | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but |



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| | | it also reflects social, political and economic perspectives of the Indian Society |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC510) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC609) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

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| Any Additional Information | View Document |


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2022-23

| Category | Name of the Course | Relevance |
|--------------|----------------------------------|--|
| Environment | Environmental Science (MC210) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC309) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work• To help students reflect critically on gender violence• To expose students to more egalitarian interactions between men and women |
| Constitution | CONSTITUTION OF INDIA (MC410) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |



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| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC510) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC609) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

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| Any Additional Information | <u>View Document</u> |


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. ELECTRONICS AND COMMUNICATION ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)

Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--------------------------------------|-----------|----------|----------|-----------|
| 1 | MA301BS | Mathematics – IV | 4 | 1 | 0 | 4 |
| 2 | EC302ES | Analog Electronics | 4 | 1 | 0 | 4 |
| 3 | EC303ES | Electrical Technology | 4 | 1 | 0 | 4 |
| 4 | EC304ES | Signals and Stochastic Process | 3 | 1 | 0 | 3 |
| 5 | EC305ES | Network Analysis | 3 | 1 | 0 | 3 |
| 6 | EC306ES | Electronic Devices and Circuits Lab | 0 | 0 | 3 | 2 |
| 7 | EC307ES | Basic Simulation Lab | 0 | 0 | 3 | 2 |
| 8 | EC308ES | Basic Electrical Engineering Lab | 0 | 0 | 3 | 2 |
| 9 | *MC300ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 5 | 9 | 24 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | EC401ES | Switching Theory and Logic Design | 3 | 1 | 0 | 3 |
| 2 | EC402ES | Pulse and Digital Circuits | 4 | 0 | 0 | 4 |
| 3 | EE404ES | Control Systems | 4 | 1 | 0 | 4 |
| 4 | EC405ES | Analog Communications | 4 | 0 | 0 | 4 |
| 5 | SM405MS | Business Economics and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | EC406ES | Analog Communications Lab | 0 | 0 | 3 | 2 |
| 7 | EC407ES | Pulse and Digital Circuits Lab | 0 | 0 | 3 | 2 |
| 8 | EC408ES | Analog Electronics Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 2 | 12 | 24 |

III YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | EC501PC | Electromagnetic Theory and Transmission Lines | 4 | 1 | 0 | 4 |
| 2 | EC502PC | Linear and Digital IC Applications | 4 | 0 | 0 | 4 |
| 3 | EC503PC | Digital Communications | 4 | 1 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | EC505PC | Linear IC Applications Lab | 0 | 0 | 3 | 2 |
| 7 | EC506PC | Digital IC Applications Lab | 0 | 0 | 3 | 2 |
| 8 | EC507PC | Digital Communications Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 9 | 24 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 3 | EC601PC | Antennas and Wave Propagation | 4 | 0 | 0 | 4 |
| 4 | EC602PC | Microprocessors and Microcontrollers | 4 | 0 | 0 | 4 |
| 5 | EC603PC | Digital Signal Processing | 4 | 0 | 0 | 4 |
| 6 | EC604PC | Digital Signal Processing Lab | 0 | 0 | 3 | 2 |
| 7 | EC605PC | Microprocessors and Microcontrollers Lab | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 0 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S.No. | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-----------------------------|---|---|---|---------|
| 1 | EC701PC | Microwave Engineering | 4 | 0 | 0 | 4 |
| 2 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 5 | EC702PC | VLSI Design | 4 | 0 | 0 | 4 |

MC300ES: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

B.Tech. II Year I Sem.

L T P C
3 0 0 0

Course Objectives:

1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations

Course Outcomes:

1. Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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Pitapur (V), Balasrampalem (Dist)

MC400HS: GENDER SENSITIZATION LAB

B.Tech. II Year II Sem.

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Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I

UNDERSTANDING GENDER

Gender: Why Should We Study It? (*Towards a World of Equals*: Unit -1)

Socialization: Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT - II

GENDER AND BIOLOGY:

Missing Women: Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.


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UNIT - III

GENDER AND LABOUR

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

ISSUES OF VIOLENCE

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT - V

GENDER: CO - EXISTENCE

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

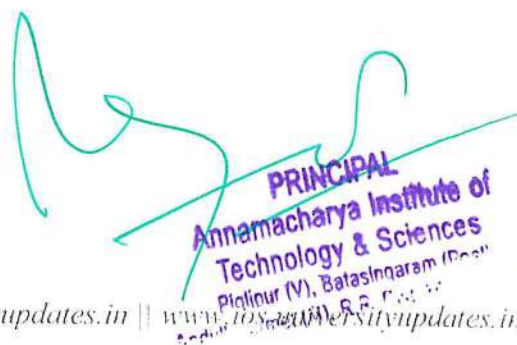
TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad, Telangana State** in the year **2015**.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at: <http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>


PRINCIPAL
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Pitapur (V), Batasindaram (Dist)
Sri Potturu Subbarao University
of Technology, Pitapur

PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

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|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.


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UNIT - V

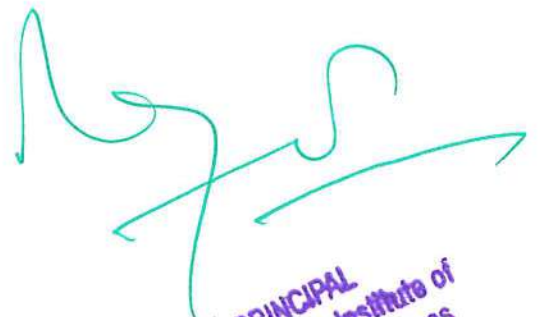
Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | AP102BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | AP105BS | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | EE203ES | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | EE208ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 2 | 10 | 19 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | EC301PC | Electronic Devices and Circuits | 3 | 1 | 0 | 4 |
| 2 | EC302PC | Network Analysis and Transmission Lines | 3 | 0 | 0 | 3 |
| 3 | EC303PC | Digital System Design | 3 | 1 | 0 | 4 |
| 4 | EC304PC | Signals and Systems | 3 | 1 | 0 | 4 |
| 5 | EC305ES | Probability Theory and Stochastic Processes | 3 | 0 | 0 | 3 |
| 6 | EC306PC | Electronic Devices and Circuits Lab | 0 | 0 | 2 | 1 |
| 7 | EC307PC | Digital System Design Lab | 0 | 0 | 2 | 1 |
| 8 | EC308ES | Basic Simulation Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 6 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | MA401BS | Laplace Transforms, Numerical Methods & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | EC402PC | Electromagnetic Fields and Waves | 3 | 0 | 0 | 3 |

| | | | | | | |
|---|---------|---------------------------------------|-----------|----------|-----------|-----------|
| 3 | EC403PC | Analog and Digital Communications | 3 | 1 | 0 | 4 |
| 4 | EC404PC | Linear IC Applications | 3 | 0 | 0 | 3 |
| 5 | EC405PC | Electronic Circuit Analysis | 3 | 0 | 0 | 3 |
| 6 | EC406PC | Analog and Digital Communications Lab | 0 | 0 | 3 | 1.5 |
| 7 | EC407PC | IC Applications Lab | 0 | 0 | 3 | 1.5 |
| 8 | EC408PC | Electronic Circuit Analysis Lab | 0 | 0 | 2 | 1 |
| 9 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 2 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | EC501PC | Microprocessors & Microcontrollers | 3 | 1 | 0 | 4 |
| 2 | EC502PC | Data Communications and Networks | 3 | 1 | 0 | 4 |
| 3 | EC503PC | Control Systems | 3 | 1 | 0 | 4 |
| 4 | SM504MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 6 | EC505PC | Microprocessors & Microcontrollers Lab | 0 | 0 | 3 | 1.5 |
| 7 | EC506PC | Data Communications and Networks Lab | 0 | 0 | 3 | 1.5 |
| 8 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------|-----------|----------|----------|-----------|
| 1 | EC601PC | Antennas and Propagation | 3 | 1 | 0 | 4 |
| 2 | EC602PC | Digital Signal Processing | 3 | 1 | 0 | 4 |
| 3 | EC603PC | VLSI Design | 3 | 1 | 0 | 4 |
| 4 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6 | EC604PC | Digital Signal Processing Lab | 0 | 0 | 3 | 1.5 |
| 7 | EC605PC | e - CAD Lab | 0 | 0 | 3 | 1.5 |
| 8 | EC606PC | Scripting Languages Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 8 | 22 |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | EC701PC | Microwave and Optical Communications | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 4 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | EC703PC | Microwave and Optical Communications Lab | 0 | 0 | 2 | 1 |
| 7 | EC704PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 8 | EC705PC | Seminar | 0 | 0 | 2 | 1 |
| 9 | EC706PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 0 | 10 | 21 |

***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

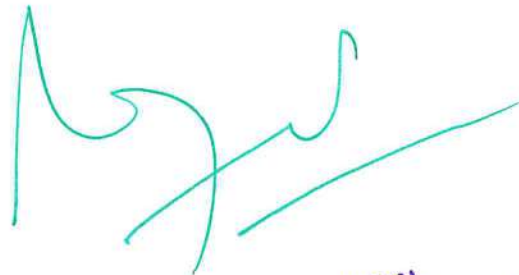
TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.

- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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MC309/*MC409: CONSTITUTION OF INDIA*B.Tech. II Year I Sem.**

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The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**
(An Activity-based Course)

B.Tech. II Year II Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".

Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**

- ☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Semester

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|---|---|---|---|
| 3 | 0 | 0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.


UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE STRUCTURE, I & II YEAR SYLLABUS (R22 Regulations)
Applicable from AY 2022-23 Batch

I Year I Semester

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|---|-----------|----------|-----------|-----------|
| 1. | MA101BS | Matrices and Calculus | 3 | 1 | 0 | 4 |
| 2. | PH102BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3. | EC103ES | C Programming for Engineers | 3 | 0 | 0 | 3 |
| 4. | ME104ES | Engineering Workshop | 0 | 1 | 3 | 2.5 |
| 5. | EN105HS | English for Skill Enhancement | 2 | 0 | 0 | 2 |
| 6. | EC106ES | Elements of Electronics and Communication Engineering | 0 | 0 | 2 | 1 |
| 7. | PH107BS | Applied Physics Laboratory | 0 | 0 | 3 | 1.5 |
| 8. | EC108ES | C Programming for Engineers Laboratory | 0 | 0 | 2 | 1 |
| 9. | EN109HS | English Language and Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 10. | *MC110 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| Total | | | 14 | 3 | 12 | 20 |

I Year II Semester

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------------|-------------|---|-----------|----------|-----------|-----------|
| 1. | MA201BS | Ordinary Differential Equations and Vector Calculus | 3 | 1 | 0 | 4 |
| 2. | CH202BS | Engineering Chemistry | 3 | 1 | 0 | 4 |
| 3. | ME203ES | Computer Aided Engineering Graphics | 1 | 0 | 4 | 3 |
| 4. | EE204ES | Basic Electrical Engineering | 2 | 0 | 0 | 2 |
| 5. | EC205ES | Electronic Devices and Circuits | 2 | 0 | 0 | 2 |
| 6. | EC206ES | Applied Python Programming Laboratory | 0 | 1 | 2 | 2 |
| 7. | CH207BS | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 8. | EE208ES | Basic Electrical Engineering Laboratory | 0 | 0 | 2 | 1 |
| 9. | EC209ES | Electronic Devices and Circuits Laboratory | 0 | 0 | 2 | 1 |
| Total | | | 11 | 3 | 12 | 20 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|----------------------|-------------|---|-----------|----------|----------|-----------|
| 1 | | Numerical Methods and Complex Variables | 3 | 1 | 0 | 4 |
| 2 | | Analog Circuits | 3 | 0 | 0 | 3 |
| 3 | | Network analysis and Synthesis | 3 | 0 | 0 | 3 |
| 4 | | Digital Logic Design | 3 | 0 | 0 | 3 |
| 5 | | Signals and Systems | 3 | 1 | 0 | 4 |
| 6 | | Analog Circuits Laboratory | 0 | 0 | 2 | 1 |
| 7 | | Digital logic Design Laboratory | 0 | 0 | 2 | 1 |
| 8 | | Basic Simulation Laboratory | 0 | 0 | 2 | 1 |
| 9 | *MC | Constitution of India | 3 | 0 | 0 | 0 |
| Total Credits | | | 18 | 2 | 6 | 20 |

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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1 | | Probability Theory and Stochastic Processes | 3 | 0 | 0 | 3 |
| 2 | | Electromagnetic Fields and Transmission Lines | 3 | 0 | 0 | 3 |
| 3 | | Analog and Digital Communications | 3 | 0 | 0 | 3 |
| 4 | | Linear and Digital IC Applications | 3 | 0 | 0 | 3 |
| 5 | | Electronic Circuit Analysis | 3 | 0 | 0 | 3 |
| 6 | | Analog and Digital Communications Laboratory | 0 | 0 | 2 | 1 |
| 7 | | Linear and Digital IC Applications Laboratory | 0 | 0 | 2 | 1 |
| 8 | | Electronic Circuit Analysis Laboratory | 0 | 0 | 2 | 1 |
| 9 | | Real Time Project/ Field Based Project | 0 | 0 | 4 | 2 |
| 10 | *MC | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 0 | 12 | 20 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | | Microcontrollers | 3 | 1 | 0 | 4 |
| 2 | | IoT Architectures and Protocols | 3 | 0 | 0 | 3 |
| 3 | | Control Systems | 3 | 1 | 0 | 4 |
| 4 | | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective – I | 3 | 0 | 0 | 3 |
| 6 | | Microcontrollers Laboratory | 0 | 0 | 2 | 1 |
| 7 | | IoT Architectures and Protocols Laboratory | 0 | 0 | 2 | 1 |
| 8 | | Advanced English Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 9 | *MC | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 6 | 20 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | | Antennas and Wave Propagation | 3 | 0 | 0 | 3 |
| 2 | | Digital Signal Processing | 3 | 0 | 0 | 3 |
| 3 | | CMOS VLSI Design | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | | Digital Signal Processing Laboratory | 0 | 0 | 2 | 1 |
| 7 | | CMOS VLSI Design Laboratory | 0 | 0 | 2 | 1 |
| 8 | | Advanced Communication Laboratory | 0 | 0 | 2 | 1 |
| 9 | | Industry Oriented Mini Project/ Internship | 0 | 0 | 4 | 2 |
| 10 | *MC | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 0 | 10 | 20 |

Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.


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ENVIRONMENTAL SCIENCE

B.Tech. I Year I Sem.

| | | | |
|---|---|---|---|
| L | T | P | C |
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act-1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water,

biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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Piglipur (V), Batasingaram (Post)
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CONSTITUTION OF INDIA

B.Tech. II Year I Sem.

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Course Objectives: Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes: Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
- Discuss the passage of the Hindu Code Bill of 1956.

Unit - 1 History of Making of the Indian Constitution- History of Drafting Committee.**Unit - 2** Philosophy of the Indian Constitution- Preamble Salient Features**Unit - 3** Contours of Constitutional Rights & Duties - Fundamental Rights

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies
- Directive Principles of State Policy
- Fundamental Duties.

Unit - 4 Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions**Unit - 5** Local Administration: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Panchayat raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO ZilaPanchayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy**Unit - 6** Election Commission: Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.**Suggested Reading:**

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.


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GENDER SENSITIZATION LAB

B.Tech. II Year II Sem.

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| 0 | 0 | 2 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

Unit-I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

Unit – II: GENDER ROLES AND RELATIONS

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Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

Unit – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

Unit – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No!-Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

Unit – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

➤ *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*

☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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 Andhra Pradesh (M) R.P. 511 001, 512

B.Tech. in ELECTRICAL AND ELECTRONICS ENGINEERING
Applicable From 2018-19 Admitted Batch-(R18)

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|---------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | |
| 2 | CH102BS | Chemistry | 3 | 1 | 0 | |
| 3 | EE103ES | Basic Electrical Engineering | 3 | 0 | 0 | |
| 4 | ME105ES | Engineering Workshop | 1 | 0 | 3 | |
| 5 | EN105HS | English | 2 | 0 | 0 | |
| 6 | CH106BS | Engineering Chemistry Lab | 0 | 0 | 3 | |
| 7 | EN107HS | English Language and Communication Skills Lab | 0 | 0 | 2 | |
| 8 | EE108ES | Basic Electrical Engineering Lab | 0 | 0 | 2 | |
| | | Induction Programme | | | | |
| | | Total Credits | 12 | 2 | 10 | |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|---------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | |
| 2 | AP202BS | Applied Physics | 3 | 1 | 0 | |
| 3 | CS203ES | Programming for Problem Solving | 3 | 1 | 0 | |
| 4 | ME204ES | Engineering Graphics | 1 | 0 | 4 | |
| 5 | AP205BS | Applied Physics Lab | 0 | 0 | 3 | |
| 6 | CS206ES | Programming for Problem Solving Lab | 0 | 0 | 3 | |
| 7 | *MC209ES | Environmental Science | 3 | 0 | 0 | |
| | | Total Credits | 13 | 3 | 10 | |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------|-----------|----------|----------|---------|
| 1 | EE301ES | Engineering Mechanics | 3 | 1 | 0 | |
| 2 | EE302PC | Electrical Circuit Analysis | 3 | 1 | 0 | |
| 3 | EE303PC | Analog Electronics | 3 | 0 | 0 | |
| 4 | EE304PC | Electrical Machines - I | 3 | 1 | 0 | |
| 5 | EE305PC | Electromagnetic Fields | 3 | 0 | 0 | |
| 6 | EE306PC | Electrical Machines Lab - I | 0 | 0 | 2 | |
| 7 | EE307PC | Analog Electronics Lab | 0 | 0 | 2 | |
| 8 | EE308PC | Electrical Circuits Lab | 0 | 0 | 2 | |
| 9 | *MC309 | Gender Sensitization Lab | 0 | 0 | 2 | |
| | | Total Credits | 15 | 3 | 8 | |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | MA401BS | Laplace Transforms, Numerical Methods & Complex variables | 3 | 1 | 0 | |

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Andhulapurmet (M), R.R. 110-501

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|---|---------|------------------------------|-----------|----------|----------|--|
| 2 | EE402PC | Electrical Machines – II | 3 | 1 | 0 | |
| 3 | EE403PC | Digital Electronics | 3 | 0 | 0 | |
| 4 | EE404PC | Control Systems | 3 | 1 | 0 | |
| 5 | EE405PC | Power System - I | 3 | 0 | 0 | |
| 6 | EE406PC | Digital Electronics Lab | 0 | 0 | 2 | |
| 7 | EE407PC | Electrical Machines Lab - II | 0 | 0 | 2 | |
| 8 | EE408PC | Control Systems Lab | 0 | 0 | 2 | |
| 9 | *MC409 | Constitution of India | 3 | 0 | 0 | |
| | | Total Credits | 18 | 3 | 6 | |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|---------|
| 1 | EE501PE | Power Electronics | 3 | 1 | 0 | |
| 2 | EE502PE | Power System-II | 3 | 1 | 0 | |
| 3 | EE503PE | Measurements and Instrumentation | 3 | 1 | 0 | |
| 4 | | Professional Elective-I | 3 | 0 | 0 | |
| 5 | SM504MS | Business Economics and Financial Analysis | 3 | 0 | 0 | |
| 6 | EE505PC | Power System Simulation Lab | 0 | 0 | 2 | |
| 7 | EE506PC | Power Electronics Lab | 0 | 0 | 2 | |
| 8 | EE507PC | Measurements and Instrumentation Lab | 0 | 0 | 2 | |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | |
| | | Total Credits | 18 | 3 | 8 | |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|---------|
| 1 | | Open Elective-I | 3 | 0 | 0 | |
| 2 | | Professional Elective-II | 3 | 0 | 0 | |
| 3 | EE601PC | Signals and Systems | 2 | 1 | 0 | |
| 4 | EE602PC | Microprocessors & Microcontrollers | 3 | 0 | 0 | |
| 5 | EE603PC | Power System Protection | 3 | 1 | 0 | |
| 6 | EE604PC | Power System Operation and Control | 3 | 0 | 0 | |
| 7 | EE605PC | Power System Lab | 0 | 0 | 2 | |
| 8 | EE606PC | Microprocessors & Microcontrollers Lab | 0 | 0 | 2 | |
| 9 | EE607PC | Signals and Systems Lab | 0 | 0 | 2 | |
| 10 | *MC609 | Environmental Science | 3 | 0 | 0 | |
| | | Total Credits | 20 | 2 | 6 | |

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | | Open Elective-II | 3 | 0 | 0 | |
| 2 | | Professional Elective-III | 3 | 0 | 0 | |
| 3 | | Professional Elective-IV | 3 | 0 | 0 | |
| 4 | SM701MS | Fundamentals of Management for Engineers | 3 | 0 | 0 | |
| 5 | EE701PC | Electrical & Electronics Design Lab | 1 | 0 | 4 | |
| 6 | EE702PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 4 | |
| 7 | EE703PC | Seminar | 0 | 0 | 2 | |

| | | | | | | |
|--|---------|----------------------|-----------|----------|-----------|--|
| | EE704PC | Project Stage - I | 0 | 0 | 6 | |
| | | Total Credits | 13 | 0 | 16 | |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-----------------------------------|----------|----------|-----------|---------|
| 1 | | Open Elective-III | 3 | 0 | 0 | |
| 2 | | Professional Elective-V(PQ&FACTS) | 3 | 0 | 0 | |
| 3 | | Professional Elective-VI(EDS) | 3 | 0 | 0 | |
| 4 | EE801PC | Project Stage - II | 0 | 0 | 14 | |
| | | Total Credits | 9 | 0 | 14 | |

Professional Elective - I

| | |
|---------|---------------------------|
| EE511PE | Computer Architecture |
| EE512PE | High Voltage Engineering |
| EE513PE | Electrical Machine Design |

Professional Elective - II

| | |
|---------|-------------------------------|
| EE611PE | Optimization Techniques |
| EE612PE | Power Semiconductor Drives |
| EE613PE | Wind and Solar Energy systems |

Professional Elective - III

| | |
|---------|--------------------------------|
| EE711PE | Digital Control systems |
| EE712PE | Digital Signal Processing |
| EE713PE | Electrical and Hybrid Vehicles |

Professional Elective - IV

| | |
|---------|-------------------------------|
| EE721PE | HVDC Transmission |
| EE722PE | Power System Reliability |
| EE723PE | Industrial Electrical Systems |

Professional Elective - V

| | |
|---------|---|
| EE811PE | Power Quality & FACTS |
| EE812PE | Control Systems Design |
| EE813PE | AI Techniques in Electrical Engineering |

Professional Elective - VI

| | |
|---------|-------------------------------------|
| EE821PE | Smart Grid Technologies |
| EE822PE | Electrical Distribution Systems |
| EE823PE | Advanced Control of Electric Drives |


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 Dist. Nalgonda, R.R. Dist. No. 202

***MC109ES/*MC209ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year II Sem.

| L | T | P | C |
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| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP) **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.

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***MC309: GENDER SENSITIZATION LAB**
(An Activity-based Course)

B.Tech. II Year I Sem.

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COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out/Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".**

- ▣ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%

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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

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| 3 | 0 | 0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.

UNIT – V

New development of intellectual property: new developments in trade mark law, copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.

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 Dist. HYD-509 992

***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes: Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan

(EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.


TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.

Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)

(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch


I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. MECHANICAL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)


Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | ME304ES | Thermodynamics | 4 | 1 | 0 | 4 |
| 3 | ME302ES | Kinematics of Machinery | 4 | 1 | 0 | 4 |
| 4 | ME305ES | Metallurgy and Material Science | 3 | 0 | 0 | 3 |
| 5 | ME303ES | Mechanics of Solids | 3 | 1 | 0 | 3 |
| 6 | ME306ES | Fuels and Lubricants Lab | 0 | 0 | 3 | 2 |
| 7 | ME307ES | Mechanics of Solids Lab | 0 | 0 | 3 | 2 |
| 8 | ME308ES | Metallurgy and Material Science Lab | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 4 | 12 | 24 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | ME403ES | Dynamics of Machinery | 4 | 1 | 0 | 4 |
| 2 | ME401ES | Fluid Mechanics and Hydraulic Machines | 4 | 1 | 0 | 4 |
| 3 | ME404ES | Machine Drawing | 2 | 0 | 4 | 4 |
| 4 | ME405ES | Manufacturing Process | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | ME406ES | Kinematics and Dynamics Lab | 0 | 0 | 3 | 2 |
| 7 | ME407ES | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 3 | 2 |
| 8 | ME408ES | Manufacturing Process Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 15 | 24 |


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III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------|-----------|----------|----------|-----------|
| 1 | ME501PC | Design of Machine Members - I | 4 | 1 | 0 | 4 |
| 2 | ME502PC | Thermal Engineering-I | 4 | 1 | 0 | 4 |
| 3 | ME503PC | Metrology and Machine Tools | 4 | 1 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | ME505PC | Thermal Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | ME506PC | Machine Tools Lab | 0 | 0 | 3 | 2 |
| 8 | ME507PC | Engineering Metrology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME601PC | Thermal Engineering –II | 4 | 1 | 0 | 4 |
| 2 | ME602PC | Design of Machine Members-II | 4 | 1 | 0 | 4 |
| 3 | ME603PC | Heat Transfer | 4 | 1 | 0 | 4 |
| 4 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Heat Transfer Lab | 0 | 0 | 3 | 2 |
| 7 | ME605PC | CADD and MATLAB | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 3 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | ME701PC | CAD/CAM | 4 | 0 | 0 | 4 |
| 2 | ME702PC | Instrumentation and Control System | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 6 | ME703PC | CAD/CAM Lab | 0 | 0 | 3 | 2 |
| 7 | ME704PC | Instrumentation and Control Systems Lab | 0 | 0 | 3 | 2 |
| 8 | ME705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |

| | | | | | | |
|---|---------|----------------------|-----------|----------|-----------|-----------|
| 9 | ME706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 0 | 11 | 24 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | - | Open Elective – III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Finite Element Methods |
| ME612PE | Refrigeration and Air Conditioning |
| ME613PE | Machine Tool Design |
| ME614PE | IC Engines and Gas Turbines |

Professional Elective - II

| | |
|---------|-------------------------|
| ME721PE | Composite materials |
| ME722PE | Industrial Management |
| ME723PE | Power Plant Engineering |
| ME724PE | Operations Research |

Professional Elective – III

| | |
|---------|------------------------------|
| ME731PE | Engineering Tribology |
| ME732PE | Computational Fluid Dynamics |
| ME733PE | Robotics |
| ME734PE | CNC Technology |

Professional Elective - IV

| | |
|---------|-----------------------------------|
| ME741PE | Mechanical Vibrations |
| ME742PE | Turbo Machines |
| ME743PE | MEMS |
| ME744PE | Additive Manufacturing Technology |

Professional Elective - V

| | |
|---------|---------------------------------|
| ME851PE | Automation in Manufacturing |
| ME852PE | Fluid Power System |
| ME853PE | Renewable Energy Sources |
| ME854PE | Production Planning and Control |


Professional Elective - VI

| | |
|---------|------------------------------------|
| ME861PE | Automobile Engineering |
| ME862PE | Advanced Mechanics of Solids |
| ME863PE | Unconventional Machining Processes |
| ME864PE | Advanced Materials Technology |

***Open Elective** subjects' syllabus is provided in a separate document.

***Open Elective** – Students should take Open Electives from the List of Open Electives Offered by Other Departments/Branches Only.

Ex: - A Student of Mechanical Engineering can take Open Electives from all other departments/branches except Open Electives offered by Mechanical Engineering Dept.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

| | | |
|----------|--------------|----------|
| L | T/P/D | C |
| 0 | 0/3/0 | 0 |

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.

UNIT-III**GENDER AND LABOUR**

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV**ISSUES OF VIOLENCE**

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V**GENDER: CO - EXISTENCE**

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad**, Telangana State in the year **2015**.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdul/>

MC400ES: ENVIRONMENTAL SCIENCE & TECHNOLOGY

B.Tech. II Year II Sem.

L T/P/D C
3 0/3/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT - V

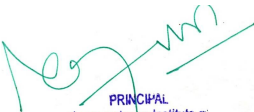
Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T/P/D C
3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walkaway Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V


Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in MECHANICAL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Probability and Statistics & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | ME302PC | Mechanics of Solids | 3 | 1 | 0 | 4 |
| 3 | ME303PC | Material Science II and Metallurgy | 3 | 0 | 0 | 3 |
| 4 | ME304PC | Production Technology | 3 | 0 | 0 | 3 |
| 5 | ME305PC | Thermodynamics | 3 | 1 | 0 | 4 |
| 6 | ME306PC | Production Technology Lab | 0 | 0 | 2 | 1 |
| 7 | ME307PC | Machine Drawing Practice | 0 | 0 | 2 | 1 |
| 8 | ME308PC | Material Science and Mechanics of Solids Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 6 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|----------|-----------|
| 2 | ME402PC | Kinematics of Machinery | 3 | 1 | 0 | 4 |
| 3 | ME403PC | Thermal Engineering - I | 3 | 1 | 0 | 4 |
| 4 | ME404PC | Fluid Mechanics and Hydraulic Machines | 3 | 1 | 0 | 4 |
| 5 | ME405PC | Instrumentation and Control Systems | 3 | 0 | 0 | 3 |
| 6 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 7 | ME407PC | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 2 | 1 |
| 8 | ME408PC | Instrumentation and Control Systems Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 3 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME501PC | Dynamics of Machinery | 3 | 1 | 0 | 4 |
| 2 | ME502PC | Design of Machine Members-I | 3 | 0 | 0 | 3 |
| 3 | ME503PC | Metrology & Machine Tools | 3 | 0 | 0 | 3 |
| 4 | SM504MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | ME505PC | Thermal Engineering-II | 3 | 0 | 0 | 3 |
| 6 | ME506PC | Operations Research | 3 | 0 | 0 | 3 |
| 7 | ME507PC | Thermal Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | ME508PC | Metrology & Machine Tools Lab | 0 | 0 | 2 | 1 |
| 9 | ME509PC | Kinematics & Dynamics Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | ME601PC | Design of Machine Members-II | 3 | 0 | 0 | 3 |
| 2 | ME602PC | Heat Transfer | 3 | 1 | 0 | 4 |
| 3 | ME603PC | CAD & CAM | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Finite Element Methods | 3 | 0 | 0 | 3 |
| 7 | ME605PC | Heat Transfer Lab | 0 | 0 | 2 | 1 |
| 8 | ME606PC | CAD & CAM Lab | 0 | 0 | 2 | 1 |
| 9 | EN608HS | Advanced Communication Skills lab | 0 | 0 | 2 | 1 |
| 10 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------------|---|---|---|---------|
| 1 | ME701PC | Refrigeration & Air Conditioning | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - II | 3 | 0 | 0 | 3 |

| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 6 | ME702PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | ME703PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | ME704PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 15 | 0 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective – V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Project Stage - II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Unconventional Machining Processes |
| ME612PE | Machine Tool Design |
| ME613PE | Production Planning & Control |

Professional Elective – II

| | |
|---------|-----------------------------|
| ME711PE | Additive Manufacturing |
| ME712PE | Automation in Manufacturing |
| ME713PE | MEMS |

Professional Elective – III

| | |
|---------|--------------------------|
| ME721PE | Power Plant Engineering |
| ME722PE | Automobile Engineering |
| ME723PE | Renewable Energy Sources |

Professional Elective – IV

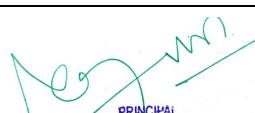
| | |
|---------|------------------------------|
| ME731PE | Computational Fluid Dynamics |
| ME732PE | Turbo Machinery |
| ME733PE | Fluid Power Systems |

Professional Elective – V

| | |
|---------|-----------------------|
| ME811PE | Industrial Robotics |
| ME812PE | Mechanical Vibrations |
| MM813PE | Composite Materials |

Professional Elective – VI

| | |
|---------|--------------------------------------|
| ME821PE | Industrial Management |
| ME822PE | Production and Operations Management |
| ME823PE | Tribology |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

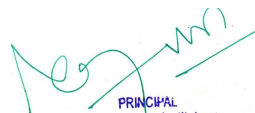
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- “My Mother doesn’t Work.” “Share the Load.”-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking OutIs Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-“I Fought for my Life....”

UNIT – V: GENDER AND CULTURE


Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on “Gender”.**
- ☞ **ESSENTIAL READING:** The Textbook, “Towards a World of Equals: A Bilingual Textbook on Gender” written by A.Suneetha, Uma Bhugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.


UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT BOOKS & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.



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Abdulapuram (M), R.R. Dist. HYD-50* 982

***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Semester

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

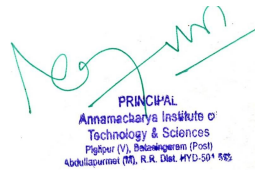
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

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2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in MECHANICAL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Probability and Statistics & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | ME302PC | Mechanics of Solids | 3 | 1 | 0 | 4 |
| 3 | ME303PC | Material Science and Metallurgy | 3 | 0 | 0 | 3 |
| 4 | ME304PC | Production Technology | 3 | 0 | 0 | 3 |
| 5 | ME305PC | Thermodynamics | 3 | 1 | 0 | 4 |
| 6 | ME306PC | Production Technology Lab | 0 | 0 | 2 | 1 |
| 7 | ME307PC | Machine Drawing Practice | 0 | 0 | 2 | 1 |
| 8 | ME308PC | Material Science and Mechanics of Solids Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 6 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|----------|-----------|
| 2 | ME402PC | Kinematics of Machinery | 3 | 1 | 0 | 4 |
| 3 | ME403PC | Thermal Engineering - I | 3 | 1 | 0 | 4 |
| 4 | ME404PC | Fluid Mechanics and Hydraulic Machines | 3 | 1 | 0 | 4 |
| 5 | ME405PC | Instrumentation and Control Systems | 3 | 0 | 0 | 3 |
| 6 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 7 | ME407PC | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 2 | 1 |
| 8 | ME408PC | Instrumentation and Control Systems Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 3 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME501PC | Dynamics of Machinery | 3 | 1 | 0 | 4 |
| 2 | ME502PC | Design of Machine Members-I | 3 | 0 | 0 | 3 |
| 3 | ME503PC | Metrology & Machine Tools | 3 | 0 | 0 | 3 |
| 4 | SM504MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | ME505PC | Thermal Engineering-II | 3 | 0 | 0 | 3 |
| 6 | ME506PC | Operations Research | 3 | 0 | 0 | 3 |
| 7 | ME507PC | Thermal Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | ME508PC | Metrology & Machine Tools Lab | 0 | 0 | 2 | 1 |
| 9 | ME509PC | Kinematics & Dynamics Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | ME601PC | Design of Machine Members-II | 3 | 0 | 0 | 3 |
| 2 | ME602PC | Heat Transfer | 3 | 1 | 0 | 4 |
| 3 | ME603PC | CAD & CAM | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Finite Element Methods | 3 | 0 | 0 | 3 |
| 7 | ME605PC | Heat Transfer Lab | 0 | 0 | 2 | 1 |
| 8 | ME606PC | CAD & CAM Lab | 0 | 0 | 2 | 1 |
| 9 | EN608HS | Advanced Communication Skills lab | 0 | 0 | 2 | 1 |
| 10 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------------|---|---|---|---------|
| 1 | ME701PC | Refrigeration & Air Conditioning | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - II | 3 | 0 | 0 | 3 |

| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 6 | ME702PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | ME703PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | ME704PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 15 | 0 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective – V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Project Stage - II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Unconventional Machining Processes |
| ME612PE | Machine Tool Design |
| ME613PE | Production Planning & Control |

Professional Elective – II

| | |
|---------|-----------------------------|
| ME711PE | Additive Manufacturing |
| ME712PE | Automation in Manufacturing |
| ME713PE | MEMS |

Professional Elective – III

| | |
|---------|--------------------------|
| ME721PE | Power Plant Engineering |
| ME722PE | Automobile Engineering |
| ME723PE | Renewable Energy Sources |

Professional Elective – IV

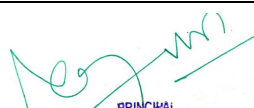
| | |
|---------|------------------------------|
| ME731PE | Computational Fluid Dynamics |
| ME732PE | Turbo Machinery |
| ME733PE | Fluid Power Systems |

Professional Elective – V

| | |
|---------|-----------------------|
| ME811PE | Industrial Robotics |
| ME812PE | Mechanical Vibrations |
| MM813PE | Composite Materials |

Professional Elective – VI

| | |
|---------|--------------------------------------|
| ME821PE | Industrial Management |
| ME822PE | Production and Operations Management |
| ME823PE | Tribology |


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 430015 (AP), R.R. Dist. MYD-501 505

***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

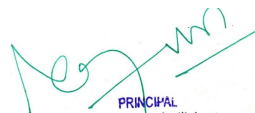
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- “My Mother doesn’t Work.” “Share the Load.”-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking OutIs Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-“I Fought for my Life....”

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals


Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on “Gender”.**
- ☞ **ESSENTIAL READING:** The Textbook, “Towards a World of Equals: A Bilingual Textbook on Gender” written by A.Suneetha, Uma Bhugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%



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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.


UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT BOOKS & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Semester

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

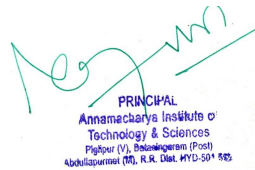
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)

(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch


I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|----------------------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| Total Credits | | | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|----------------------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| Total Credits | | | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. MECHANICAL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)


Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | ME304ES | Thermodynamics | 4 | 1 | 0 | 4 |
| 3 | ME302ES | Kinematics of Machinery | 4 | 1 | 0 | 4 |
| 4 | ME305ES | Metallurgy and Material Science | 3 | 0 | 0 | 3 |
| 5 | ME303ES | Mechanics of Solids | 3 | 1 | 0 | 3 |
| 6 | ME306ES | Fuels and Lubricants Lab | 0 | 0 | 3 | 2 |
| 7 | ME307ES | Mechanics of Solids Lab | 0 | 0 | 3 | 2 |
| 8 | ME308ES | Metallurgy and Material Science Lab | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 4 | 12 | 24 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | ME403ES | Dynamics of Machinery | 4 | 1 | 0 | 4 |
| 2 | ME401ES | Fluid Mechanics and Hydraulic Machines | 4 | 1 | 0 | 4 |
| 3 | ME404ES | Machine Drawing | 2 | 0 | 4 | 4 |
| 4 | ME405ES | Manufacturing Process | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | ME406ES | Kinematics and Dynamics Lab | 0 | 0 | 3 | 2 |
| 7 | ME407ES | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 3 | 2 |
| 8 | ME408ES | Manufacturing Process Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 15 | 24 |


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III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------|-----------|----------|----------|-----------|
| 1 | ME501PC | Design of Machine Members - I | 4 | 1 | 0 | 4 |
| 2 | ME502PC | Thermal Engineering-I | 4 | 1 | 0 | 4 |
| 3 | ME503PC | Metrology and Machine Tools | 4 | 1 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | ME505PC | Thermal Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | ME506PC | Machine Tools Lab | 0 | 0 | 3 | 2 |
| 8 | ME507PC | Engineering Metrology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME601PC | Thermal Engineering –II | 4 | 1 | 0 | 4 |
| 2 | ME602PC | Design of Machine Members-II | 4 | 1 | 0 | 4 |
| 3 | ME603PC | Heat Transfer | 4 | 1 | 0 | 4 |
| 4 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Heat Transfer Lab | 0 | 0 | 3 | 2 |
| 7 | ME605PC | CADD and MATLAB | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 3 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | ME701PC | CAD/CAM | 4 | 0 | 0 | 4 |
| 2 | ME702PC | Instrumentation and Control System | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 6 | ME703PC | CAD/CAM Lab | 0 | 0 | 3 | 2 |
| 7 | ME704PC | Instrumentation and Control Systems Lab | 0 | 0 | 3 | 2 |
| 8 | ME705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |

| | | | | | | |
|---|---------|----------------------|-----------|----------|-----------|-----------|
| 9 | ME706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 0 | 11 | 24 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | - | Open Elective – III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Finite Element Methods |
| ME612PE | Refrigeration and Air Conditioning |
| ME613PE | Machine Tool Design |
| ME614PE | IC Engines and Gas Turbines |

Professional Elective - II

| | |
|---------|-------------------------|
| ME721PE | Composite materials |
| ME722PE | Industrial Management |
| ME723PE | Power Plant Engineering |
| ME724PE | Operations Research |

Professional Elective – III

| | |
|---------|------------------------------|
| ME731PE | Engineering Tribology |
| ME732PE | Computational Fluid Dynamics |
| ME733PE | Robotics |
| ME734PE | CNC Technology |

Professional Elective - IV

| | |
|---------|-----------------------------------|
| ME741PE | Mechanical Vibrations |
| ME742PE | Turbo Machines |
| ME743PE | MEMS |
| ME744PE | Additive Manufacturing Technology |

Professional Elective - V

| | |
|---------|---------------------------------|
| ME851PE | Automation in Manufacturing |
| ME852PE | Fluid Power System |
| ME853PE | Renewable Energy Sources |
| ME854PE | Production Planning and Control |


Professional Elective - VI

| | |
|---------|------------------------------------|
| ME861PE | Automobile Engineering |
| ME862PE | Advanced Mechanics of Solids |
| ME863PE | Unconventional Machining Processes |
| ME864PE | Advanced Materials Technology |

***Open Elective** subjects' syllabus is provided in a separate document.

***Open Elective** – Students should take Open Electives from the List of Open Electives Offered by Other Departments/Branches Only.

Ex: - A Student of Mechanical Engineering can take Open Electives from all other departments/branches except Open Electives offered by Mechanical Engineering Dept.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/3/0 | 0 |

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.

UNIT-III**GENDER AND LABOUR**

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV**ISSUES OF VIOLENCE**

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V**GENDER: CO - EXISTENCE**

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad**, Telangana State in the year **2015**.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdul/>

MC400ES: ENVIRONMENTAL SCIENCE & TECHNOLOGY

B.Tech. II Year II Sem.

L T/P/D C
3 0/3/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT - V

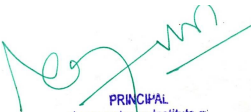
Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T/P/D C
3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walkaway Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V


Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. I YEAR COURSE STRUCTURE AND SYLLABUS (R16)

(Common for Civil, ME, AE, ME (M), MME, AU, Mining, Petroleum, CEE, ME (Nanotech))

Applicable From 2017-18 Admitted Batch


I YEAR I SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics-I | 3 | 1 | 0 | 3 |
| 2 | MA102BS | Mathematics-II | 4 | 1 | 0 | 4 |
| 3 | PH103BS | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | CS104ES | Computer Programming in C | 3 | 0 | 0 | 3 |
| 5 | ME105ES | Engineering Mechanics | 3 | 0 | 0 | 3 |
| 6 | ME106ES | Engineering Graphics | 2 | 0 | 4 | 4 |
| 7 | PH107BS | Engineering Physics Lab | 0 | 0 | 3 | 2 |
| 8 | CS108ES | Computer Programming in C Lab | 0 | 0 | 3 | 2 |
| 9 | *EA109MC | NSS | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 10 | 24 |

I YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|--|-----------|----------|----------|-----------|
| 1 | AP201BS | Applied Physics | 3 | 0 | 0 | 3 |
| 2 | CH202BS | Engineering Chemistry | 4 | 0 | 0 | 4 |
| 3 | MA203BS | Mathematics-III | 4 | 1 | 0 | 4 |
| 4 | EN204HS | Professional Communication in English | 3 | 0 | 0 | 3 |
| 5 | EE205ES | Basic Electrical and Electronics Engineering | 4 | 0 | 0 | 4 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 2 |
| 7 | EN207HS | English Language Communication Skills Lab | 0 | 0 | 3 | 2 |
| 8 | ME208ES | Engineering Workshop | 0 | 0 | 3 | 2 |
| 9 | *EA209MC | NCC/NSO | 0 | 0 | 0 | 0 |
| | | Total Credits | 18 | 1 | 9 | 24 |

*Mandatory Course- Satisfactory/Unsatisfactory


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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.TECH. MECHANICAL ENGINEERING
II, III, IV YEARS COURSE STRUCTURE & SYLLABUS (R16)


Applicable From 2016-17 Admitted Batch

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA301BS | Mathematics - IV | 4 | 1 | 0 | 4 |
| 2 | ME304ES | Thermodynamics | 4 | 1 | 0 | 4 |
| 3 | ME302ES | Kinematics of Machinery | 4 | 1 | 0 | 4 |
| 4 | ME305ES | Metallurgy and Material Science | 3 | 0 | 0 | 3 |
| 5 | ME303ES | Mechanics of Solids | 3 | 1 | 0 | 3 |
| 6 | ME306ES | Fuels and Lubricants Lab | 0 | 0 | 3 | 2 |
| 7 | ME307ES | Mechanics of Solids Lab | 0 | 0 | 3 | 2 |
| 8 | ME308ES | Metallurgy and Material Science Lab | 0 | 0 | 3 | 2 |
| 9 | *MC300HS | Gender Sensitization Lab | 0 | 0 | 3 | 0 |
| | | Total Credits | 18 | 4 | 12 | 24 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1 | ME403ES | Dynamics of Machinery | 4 | 1 | 0 | 4 |
| 2 | ME401ES | Fluid Mechanics and Hydraulic Machines | 4 | 1 | 0 | 4 |
| 3 | ME404ES | Machine Drawing | 2 | 0 | 4 | 4 |
| 4 | ME405ES | Manufacturing Process | 3 | 0 | 0 | 3 |
| 5 | SM405MS | Business Economic and Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | ME406ES | Kinematics and Dynamics Lab | 0 | 0 | 3 | 2 |
| 7 | ME407ES | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 3 | 2 |
| 8 | ME408ES | Manufacturing Process Lab | 0 | 0 | 3 | 2 |
| 9 | *MC400ES | Environmental Science and Technology | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 15 | 24 |


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III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------|-----------|----------|----------|-----------|
| 1 | ME501PC | Design of Machine Members - I | 4 | 1 | 0 | 4 |
| 2 | ME502PC | Thermal Engineering-I | 4 | 1 | 0 | 4 |
| 3 | ME503PC | Metrology and Machine Tools | 4 | 1 | 0 | 4 |
| 4 | SM504MS | Fundamentals of Management | 3 | 0 | 0 | 3 |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | ME505PC | Thermal Engineering Lab | 0 | 0 | 3 | 2 |
| 7 | ME506PC | Machine Tools Lab | 0 | 0 | 3 | 2 |
| 8 | ME507PC | Engineering Metrology Lab | 0 | 0 | 3 | 2 |
| 9 | *MC500HS | Professional Ethics | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 3 | 9 | 24 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME601PC | Thermal Engineering –II | 4 | 1 | 0 | 4 |
| 2 | ME602PC | Design of Machine Members-II | 4 | 1 | 0 | 4 |
| 3 | ME603PC | Heat Transfer | 4 | 1 | 0 | 4 |
| 4 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Heat Transfer Lab | 0 | 0 | 3 | 2 |
| 7 | ME605PC | CADD and MATLAB | 0 | 0 | 3 | 2 |
| 8 | EN606HS | Advanced English Communication Skills Lab | 0 | 0 | 3 | 2 |
| | | Total Credits | 18 | 3 | 9 | 24 |

During Summer Vacation between III and IV Years: Industry Oriented Mini Project

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|---|---|---|---------|
| 1 | ME701PC | CAD/CAM | 4 | 0 | 0 | 4 |
| 2 | ME702PC | Instrumentation and Control System | 4 | 0 | 0 | 4 |
| 3 | | Professional Elective - II | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - III | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 6 | ME703PC | CAD/CAM Lab | 0 | 0 | 3 | 2 |
| 7 | ME704PC | Instrumentation and Control Systems Lab | 0 | 0 | 3 | 2 |
| 8 | ME705PC | Industry Oriented Mini Project | 0 | 0 | 3 | 2 |

| | | | | | | |
|---|---------|----------------------|-----------|----------|-----------|-----------|
| 9 | ME706PC | Seminar | 0 | 0 | 2 | 1 |
| | | Total Credits | 17 | 0 | 11 | 24 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | - | Open Elective – III | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - V | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Major Project | 0 | 0 | 30 | 15 |
| | | Total Credits | 9 | 0 | 30 | 24 |

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Finite Element Methods |
| ME612PE | Refrigeration and Air Conditioning |
| ME613PE | Machine Tool Design |
| ME614PE | IC Engines and Gas Turbines |

Professional Elective - II

| | |
|---------|-------------------------|
| ME721PE | Composite materials |
| ME722PE | Industrial Management |
| ME723PE | Power Plant Engineering |
| ME724PE | Operations Research |

Professional Elective – III

| | |
|---------|------------------------------|
| ME731PE | Engineering Tribology |
| ME732PE | Computational Fluid Dynamics |
| ME733PE | Robotics |
| ME734PE | CNC Technology |

Professional Elective - IV

| | |
|---------|-----------------------------------|
| ME741PE | Mechanical Vibrations |
| ME742PE | Turbo Machines |
| ME743PE | MEMS |
| ME744PE | Additive Manufacturing Technology |

Professional Elective - V

| | |
|---------|---------------------------------|
| ME851PE | Automation in Manufacturing |
| ME852PE | Fluid Power System |
| ME853PE | Renewable Energy Sources |
| ME854PE | Production Planning and Control |


Professional Elective - VI

| | |
|---------|------------------------------------|
| ME861PE | Automobile Engineering |
| ME862PE | Advanced Mechanics of Solids |
| ME863PE | Unconventional Machining Processes |
| ME864PE | Advanced Materials Technology |

***Open Elective** subjects' syllabus is provided in a separate document.

***Open Elective** – Students should take Open Electives from the List of Open Electives Offered by Other Departments/Branches Only.

Ex: - A Student of Mechanical Engineering can take Open Electives from all other departments/branches except Open Electives offered by Mechanical Engineering Dept.


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MC300HS: GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/3/0 | 0 |

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT-I**UNDERSTANDING GENDER****Gender:** Why Should We Study It? (*Towards a World of Equals*: Unit -1)**Socialization:** Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT-II**GENDER AND BIOLOGY****Missing Women:** Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.

UNIT-III**GENDER AND LABOUR**

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV**ISSUES OF VIOLENCE**

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT-V**GENDER: CO - EXISTENCE**

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK

All the five Units in the Textbook, “*Towards a World of Equals: A Bilingual Textbook on Gender*” written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by **Telugu Akademi, Hyderabad**, Telangana State in the year **2015**.

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “*I Fought For My Life...and Won.*” Available online at:
<http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdul/>

MC400ES: ENVIRONMENTAL SCIENCE & TECHNOLOGY

B.Tech. II Year II Sem.

| | | |
|----------|--------------|----------|
| L | T/P/D | C |
| 3 | 0/3/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics

of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montréal Protocol.

UNIT - V


Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.


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PROFESSIONAL ETHICS

B.Tech. III Year I Sem.
Course Code: MC500HS

L T/P/D C
3 0/0/0 0

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I

Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT - II

Basic Theories: Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

UNIT - III

Professional Practices in Engineering: Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

Central Responsibilities of Engineers - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walkaway Collapse.

UNIT - IV

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers; Organizational Complaint Procedure, difference of Professional Judgment within the Nuclear Regulatory Commission (NRC), the Hanford Nuclear Reservation.

Ethics in changing domains of research - The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct, the emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.

UNIT - V


Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing, Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. Professional Ethics: R. Subramanian, Oxford University Press, 2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.

REFERENCES:

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard , Michael J Rabins, 4e , Cengage learning, 2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. in MECHANICAL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|----------|-----------|
| 1 | MA301BS | Probability and Statistics & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | ME302PC | Mechanics of Solids | 3 | 1 | 0 | 4 |
| 3 | ME303PC | Material Science and Metallurgy | 3 | 0 | 0 | 3 |
| 4 | ME304PC | Production Technology | 3 | 0 | 0 | 3 |
| 5 | ME305PC | Thermodynamics | 3 | 1 | 0 | 4 |
| 6 | ME306PC | Production Technology Lab | 0 | 0 | 2 | 1 |
| 7 | ME307PC | Machine Drawing Practice | 0 | 0 | 2 | 1 |
| 8 | ME308PC | Material Science and Mechanics of Solids Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 3 | 6 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|----------|-----------|
| 2 | ME402PC | Kinematics of Machinery | 3 | 1 | 0 | 4 |
| 3 | ME403PC | Thermal Engineering - I | 3 | 1 | 0 | 4 |
| 4 | ME404PC | Fluid Mechanics and Hydraulic Machines | 3 | 1 | 0 | 4 |
| 5 | ME405PC | Instrumentation and Control Systems | 3 | 0 | 0 | 3 |
| 6 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 7 | ME407PC | Fluid Mechanics and Hydraulic Machines Lab | 0 | 0 | 2 | 1 |
| 8 | ME408PC | Instrumentation and Control Systems Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 3 | 8 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1 | ME501PC | Dynamics of Machinery | 3 | 1 | 0 | 4 |
| 2 | ME502PC | Design of Machine Members-I | 3 | 0 | 0 | 3 |
| 3 | ME503PC | Metrology & Machine Tools | 3 | 0 | 0 | 3 |
| 4 | SM504MS | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | ME505PC | Thermal Engineering-II | 3 | 0 | 0 | 3 |
| 6 | ME506PC | Operations Research | 3 | 0 | 0 | 3 |
| 7 | ME507PC | Thermal Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | ME508PC | Metrology & Machine Tools Lab | 0 | 0 | 2 | 1 |
| 9 | ME509PC | Kinematics & Dynamics Lab | 0 | 0 | 2 | 1 |
| 10 | *MC510 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|-----------------------------------|-----------|----------|----------|-----------|
| 1 | ME601PC | Design of Machine Members-II | 3 | 0 | 0 | 3 |
| 2 | ME602PC | Heat Transfer | 3 | 1 | 0 | 4 |
| 3 | ME603PC | CAD & CAM | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - I | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6 | ME604PC | Finite Element Methods | 3 | 0 | 0 | 3 |
| 7 | ME605PC | Heat Transfer Lab | 0 | 0 | 2 | 1 |
| 8 | ME606PC | CAD & CAM Lab | 0 | 0 | 2 | 1 |
| 9 | EN608HS | Advanced Communication Skills lab | 0 | 0 | 2 | 1 |
| 10 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 1 | 6 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------------|---|---|---|---------|
| 1 | ME701PC | Refrigeration & Air Conditioning | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective – II | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective – III | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 5 | | Open Elective - II | 3 | 0 | 0 | 3 |

| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 6 | ME702PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | ME703PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | ME704PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 15 | 0 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective – V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective - VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4 | ME801PC | Project Stage - II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective - I

| | |
|---------|------------------------------------|
| ME611PE | Unconventional Machining Processes |
| ME612PE | Machine Tool Design |
| ME613PE | Production Planning & Control |

Professional Elective – II

| | |
|---------|-----------------------------|
| ME711PE | Additive Manufacturing |
| ME712PE | Automation in Manufacturing |
| ME713PE | MEMS |

Professional Elective – III

| | |
|---------|--------------------------|
| ME721PE | Power Plant Engineering |
| ME722PE | Automobile Engineering |
| ME723PE | Renewable Energy Sources |

Professional Elective – IV

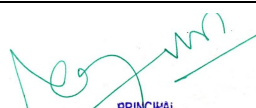
| | |
|---------|------------------------------|
| ME731PE | Computational Fluid Dynamics |
| ME732PE | Turbo Machinery |
| ME733PE | Fluid Power Systems |

Professional Elective – V

| | |
|---------|-----------------------|
| ME811PE | Industrial Robotics |
| ME812PE | Mechanical Vibrations |
| MM813PE | Composite Materials |

Professional Elective – VI

| | |
|---------|--------------------------------------|
| ME821PE | Industrial Management |
| ME822PE | Production and Operations Management |
| ME823PE | Tribology |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

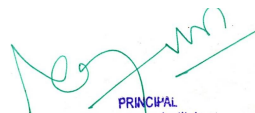
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- “My Mother doesn’t Work.” “Share the Load.”-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. - Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking OutIs Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-“I Fought for my Life....”

UNIT – V: GENDER AND CULTURE


Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- **Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on “Gender”.**
- ☞ **ESSENTIAL READING:** The Textbook, “Towards a World of Equals: A Bilingual Textbook on Gender” written by A.Suneetha, Uma Bhugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC510: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.


UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT BOOKS & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd.



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Abdulapuram (M), R.R. Dist. HYD-50* 982

***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Semester

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

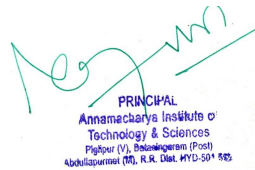
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

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2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2018-19 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|-------------------------------------|-----------|----------|-----------|-----------|
| 1 | MA101BS | Mathematics - I | 3 | 1 | 0 | 4 |
| 2 | PH102BS | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | CS103ES | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | ME104ES | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | PH105BS | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | CS106ES | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | *MC109ES | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total Credits | 13 | 3 | 10 | 18 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-------------|
| 1 | MA201BS | Mathematics - II | 3 | 1 | 0 | 4 |
| 2 | CH202BS | Chemistry | 3 | 1 | 0 | 4 |
| 3 | ME203ES | Engineering Mechanics | 3 | 1 | 0 | 4 |
| 4 | ME205ES | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | EN205HS | English | 2 | 0 | 0 | 2 |
| 6 | CH206BS | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | Total Credits | 12 | 3 | 8 | 19.0 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|----------------------------|-----------|----------|----------|-----------|
| 1 | CE301PC | Surveying and Geomatics | 3 | 0 | 0 | 3 |
| 2 | CE302PC | Engineering Geology | 2 | 0 | 0 | 2 |
| 3 | CE303PC | Strength of Materials - I | 3 | 1 | 0 | 4 |
| 4 | MA304BS | Probability and Statistics | 3 | 1 | 0 | 4 |
| 5 | CE305PC | Fluid Mechanics | 3 | 1 | 0 | 4 |
| 6 | CE306PC | Surveying Lab | 0 | 0 | 3 | 1.5 |
| 7 | CE307PC | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE308PC | Engineering Geology Lab | 0 | 0 | 2 | 1 |
| 9 | *MC309 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 17 | 3 | 8 | 21 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | EE401ES | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |

| | | | | | | |
|----|---------|--|-----------|----------|-----------|-----------|
| 2 | CE402ES | Basic Mechanical Engineering for Civil Engineers | 2 | 0 | 0 | 2 |
| 3 | CE403PC | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 4 | CE404PC | Strength of Materials - II | 3 | 0 | 0 | 3 |
| 5 | CE405PC | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 6 | CE406PC | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 7 | CE407PC | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 8 | CE409PC | Hydraulics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | EE409ES | Basic Electrical and Electronics Engineering Lab | 0 | 0 | 2 | 1 |
| 10 | *MC409 | Gender Sensitization Lab | 0 | 0 | 2 | 0 |
| | | Total Credits | 17 | 0 | 10 | 21 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 4 | CE501 | Structural Analysis-II | 3 | 0 | 0 | 3 |
| 2 | CE502PC | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3 | CE503PC | Structural Engineering -I (RCC) | 3 | 1 | 0 | 4 |
| 4 | CE504PC | Transportation Engineering | 3 | 0 | 0 | 3 |
| 5 | | Professional Elective-I | 3 | 0 | 0 | 3 |
| 6 | SM505MS | Engineering Economics and Accountancy | 2 | 0 | 0 | 2 |
| 7 | CE506PC | Highway Engineering and Concrete Technology Lab | 0 | 0 | 3 | 1.5 |
| 8 | CE507PC | Geotechnical Engineering Lab | 0 | 0 | 3 | 1.5 |
| 9 | EN508HS | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | *MC509 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 20 | 1 | 8 | 22 |


III YEAR II SEMESTER

| S. No | Course Code | Course Title | L | T | P | Credits |
|-------|-------------|---|-----------|----------|----------|-----------|
| 1 | CE601PC | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 1 | CE602PC | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2 | CE603PC | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3 | CE604PC | Structural Engineering -II (Steel) | 3 | 1 | 0 | 4 |
| 5 | | Professional Elective -II | 3 | 0 | 0 | 3 |
| 6 | | Open Elective -I | 3 | 0 | 0 | 3 |
| 7 | CE605PC | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | CE606PC | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| 9 | *MC609 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 2 | 4 | 22 |

*MC609 - Environmental Science – Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|---|---|---|---------|
| 1 | CE701PC | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | | Professional Elective -III | 3 | 0 | 0 | 3 |
| 3 | | Professional Elective -IV | 3 | 0 | 0 | 3 |


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| | | | | | | |
|---|---------|---|-----------|----------|-----------|-----------|
| 4 | | Open Elective –II | 3 | 0 | 0 | 3 |
| 5 | SM702MS | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 6 | CE703PC | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | CE704PC | Seminar | 0 | 0 | 2 | 1 |
| 8 | CE705PC | Project Stage - I | 0 | 0 | 6 | 3 |
| | | Total Credits | 14 | 1 | 12 | 21 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---------------------------|----------|----------|-----------|-----------|
| 1 | | Professional Elective -V | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective –VI | 3 | 0 | 0 | 3 |
| 3 | | Open Elective –III | 3 | 0 | 0 | 3 |
| 4 | CE801PC | Project Stage-II | 0 | 0 | 14 | 7 |
| | | Total Credits | 9 | 0 | 14 | 16 |

***MC – Satisfactory/Unsatisfactory**

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

Professional Elective – I

| | |
|---------|----------------------|
| CE511PE | Concrete Technology |
| CE512PE | Theory of Elasticity |
| CE513PE | Rock Mechanics |

Professional Elective – II

| | |
|---------|-------------------------------------|
| CE611PE | Prestressed Concrete |
| CE612PE | Elements of Earth Quake Engineering |
| CE613PE | Advanced Structural Analysis |

Professional Elective-III

| | |
|---------|-------------------------------|
| CE711PE | Remote Sensing & GIS |
| CE712PE | Ground Improvement Techniques |
| CE713PE | Advanced Structural Design |

Professional Elective -IV

| | |
|---------|-------------------------------------|
| CE721PE | Irrigation and Hydraulic Structures |
| CE722PE | Pipeline Engineering |
| CE723PE | Ground Water Hydrology |

Professional Elective –V

| | |
|---------|---------------------------------|
| CE811PE | Solid Waste Management |
| CE812PE | Environmental Impact Assessment |
| CE813PE | Air pollution |

Professional Elective -VI

| | |
|---------|--|
| CE821PE | Airports, Railways and Waterways |
| CE822PE | Urban Transportation Planning |
| CE823PE | Finite Element Methods for Civil Engineering |


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***MC109ES: ENVIRONMENTAL SCIENCE**

B.Tech. I Year I Sem.

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 0 |

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

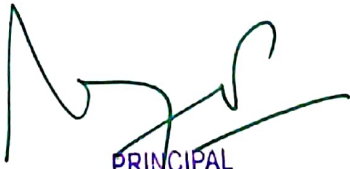
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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***MC309/*MC409: CONSTITUTION OF INDIA**

B.Tech. II Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

The Constitution of India is the supreme law of India. Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution. The Parliament of India has been empowered to amend the Constitution under Article 368, however, it cannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state. The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society. It reflects India's legacy of "diversity". It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values. No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy – Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India – The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government – Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21

***MC409/*MC309: GENDER SENSITIZATION LAB**

(An Activity-based Course)

B.Tech. II Year II Sem.

| L | T/P/D | C |
|---|-------|---|
| 0 | 0/2/0 | 0 |

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT - I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male. First lessons in Caste.

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UNIT – II: GENDER ROLES AND RELATIONS

Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu".
Domestic Violence: Speaking Out Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life"

UNIT – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*
- **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%


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***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Sem.

| L | T/P/D | C |
|---|-------|---|
| 3 | 0/0/0 | 0 |

UNIT – I

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.

UNIT – III

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – IV

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competition: Misappropriation right of publicity, false advertising.


UNIT – V

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

TEXT & REFERENCE BOOKS:

1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning.
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tata McGraw Hill Publishing company ltd



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***MC609: ENVIRONMENTAL SCIENCE**

B.Tech. III Year II Sem.

L T/P/D C
3 0/0/0 0**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures
- Understanding the environmental policies and regulations

Course Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT - III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Problems and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-

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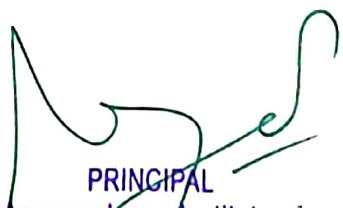
economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

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2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
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4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech. In CIVIL ENGINEERING
COURSE STRUCTURE, I & II YEAR SYLLABUS (R22 Regulations)
Applicable from AY 2022-23 Batch

I YEAR I SEMESTER

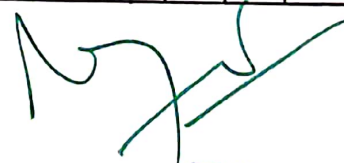
| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1. | MA101BS | Matrices and Calculus | 3 | 1 | 0 | 4 |
| 2. | PH102BS | Applied Physics | 3 | 1 | 0 | 4 |
| 3. | ME103ES | C Programming and Data Structures | 3 | 0 | 0 | 3 |
| 4. | ME104ES | Engineering Workshop | 0 | 1 | 3 | 2.5 |
| 5. | EN105HS | English for Skill Enhancement | 2 | 0 | 0 | 2 |
| 6. | CE106ES | Elements of Civil Engineering | 0 | 0 | 2 | 1 |
| 7. | PH107BS | Applied Physics Laboratory | 0 | 0 | 3 | 1.5 |
| 8. | ME108ES | C Programming and Data Structures Laboratory | 0 | 0 | 2 | 1 |
| 9. | EN109HS | English Language and Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 10. | *MC110 | Environmental Science | 3 | 0 | 0 | 0 |
| | | Induction Programme | | | | |
| | | Total | 14 | 3 | 12 | 20 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1. | MA201BS | Ordinary Differential Equations and Vector Calculus | 3 | 1 | 0 | 4 |
| 2. | CH202BS | Engineering Chemistry | 3 | 1 | 0 | 4 |
| 3. | ME203ES | Computer Aided Engineering Graphics | 1 | 0 | 4 | 3 |
| 4. | CE204ES | Applied Mechanics | 3 | 0 | 0 | 3 |
| 5. | CE205PC | Surveying | 2 | 0 | 0 | 2 |
| 6. | CE206ES | Python Programming Laboratory | 0 | 1 | 2 | 2 |
| 7. | CH207BS | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 8. | CE208PC | Surveying Laboratory - I | 0 | 0 | 2 | 1 |
| | | Total | 12 | 3 | 10 | 20 |

II YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1. | | Probability and Statistics | 3 | 1 | 0 | 4 |
| 2. | | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 3. | | Engineering Geology | 3 | 0 | 0 | 3 |
| 4. | | Strength of Materials - I | 3 | 0 | 0 | 3 |
| 5. | | Fluid Mechanics | 3 | 0 | 0 | 3 |
| 6. | | Surveying Laboratory - II | 0 | 1 | 2 | 2 |
| 7. | | Strength of Materials Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Computer Aided Drafting Laboratory | 0 | 0 | 2 | 1 |
| 9. | *MC | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 2 | 6 | 20 |



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II YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|-----------|-----------|
| 1. | | Basic Electrical and Electronics Engineering | 3 | 0 | 0 | 3 |
| 2. | | Concrete Technology | 3 | 0 | 0 | 3 |
| 3. | | Strength of Materials – II | 3 | 0 | 0 | 3 |
| 4. | | Hydraulics and Hydraulics Machinery | 3 | 0 | 0 | 3 |
| 5. | | Structural Analysis - I | 3 | 0 | 0 | 3 |
| 6. | | Fluid Mechanics and Hydraulics Machinery Laboratory | 0 | 0 | 2 | 1 |
| 7. | | Basic Electrical and Electronics Engineering Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Concrete Technology Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Real-time Research Project/ Field-Based Project | 0 | 0 | 4 | 2 |
| 10. | *MC | Gender Sensitization Laboratory | 0 | 0 | 2 | 0 |
| | | Total Credits | 15 | 0 | 12 | 20 |

III YEAR I SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|---|-----------|----------|----------|-----------|
| 1. | | Structural Analysis - II | 3 | 0 | 0 | 3 |
| 2. | | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -I (RCC) | 3 | 0 | 0 | 3 |
| 4. | | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5. | | Transportation Engineering | 3 | 0 | 0 | 3 |
| 6. | | Water Resources Engineering - I | 3 | 0 | 0 | 3 |
| 7. | | Transportation Engineering Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Geotechnical Engineering Laboratory | 0 | 0 | 2 | 1 |
| 9. | *MC | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | 21 | 0 | 4 | 20 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|--------|-------------|--|-----------|----------|-----------|-----------|
| 1. | | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2. | | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -II (Steel Structures) | 3 | 0 | 0 | 3 |
| 4. | | Professional Elective – I | 3 | 0 | 0 | 3 |
| 5. | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6. | | Environmental Engineering Laboratory | 0 | 0 | 2 | 1 |
| 7. | | Computer Aided Design Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Advanced English Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Industry Oriented Mini Project/ Internship | 0 | 0 | 4 | 2 |
| 10. | *MC | Environmental Science | 3 | 0 | 0 | 0 |
| | | Total Credits | 18 | 0 | 10 | 20 |

Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.



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ENVIRONMENTAL SCIENCE

B.Tech. I Year I Sem.

L T P C
3 0 0 0

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT - I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT - III

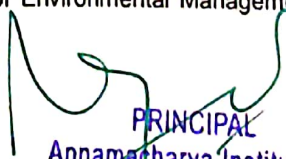
Biodiversity and Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-Gol Initiatives.

UNIT - V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan


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(EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

- 1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- 2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.



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CONSTITUTION OF INDIA

B.Tech. II Year I Sem.

L T P C
3 0 0 0

Course Objectives: Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes: Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
- Discuss the passage of the Hindu Code Bill of 1956.

Unit - 1 History of Making of the Indian Constitution- History of Drafting Committee.

Unit - 2 Philosophy of the Indian Constitution- Preamble Salient Features

Unit - 3 Contours of Constitutional Rights & Duties - Fundamental Rights

- Right to Equality
- Right to Freedom
- Right against Exploitation
- Right to Freedom of Religion
- Cultural and Educational Rights
- Right to Constitutional Remedies
- Directive Principles of State Policy
- Fundamental Duties.

Unit - 4 Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions

Unit - 5 Local Administration: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Panchayat raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO Zila Panchayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy

Unit - 6 Election Commission: Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.

Suggested Reading:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.


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GENDER SENSITIZATION LABORATORY

B.Tech. II Year II Sem.

L T P C
0 0 2 1

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

Unit-I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men
- Preparing for Womanhood. Growing up Male. First lessons in Caste.

Unit – II: GENDER ROLES AND RELATIONS


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Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles- Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum: Beyond the Binary

Unit – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work. -Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

Unit – IV: GENDER - BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a Human Rights Perspective-Sexual Harassment: Say No!-Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". Domestic Violence: Speaking Out/Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life...."

Unit – V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature- Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

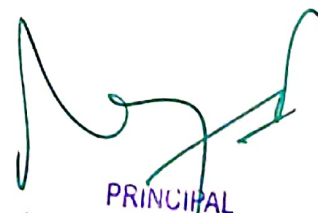
Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

- *Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".*

☞ **ESSENTIAL READING:** The Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu published by Telugu Akademi, Telangana Government in 2015.

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%



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1.3.1. Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

Response:

2018-19

| Category | Name of the Course | Relevance |
|--------------|----------------------------------|---|
| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab (MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |


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|--|---|--|
| <p style="text-align: center;">Intellectual</p> | <p style="text-align: center;">INTELLECTUAL PROPERTY RIGHTS(MC509)</p> | <ul style="list-style-type: none"> • To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights • To identify the significance of practice and procedure of Patents • To make the students to understand the statutory provisions of different forms of IPRs in simple forms. • To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design • To enable the students to keep their IP rights alive. |
| <p style="text-align: center;">Environment</p> | <p style="text-align: center;">ENVIRONMENTAL SCIENCE(MC609)</p> | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |
| <p style="text-align: center;">Gender</p> | <p style="text-align: center;">GENDER SENSITIZATION LAB (MC300HS)</p> | <ul style="list-style-type: none"> • To develop students' sensibility with regard to issues of gender in contemporary India. • To provide a critical perspective on the socialization of men and women. • To introduce students to information about some key biological aspects of genders. • To expose the students to debates on the politics and economics of work. • To help students reflect critically on gender violence. • To expose students to more egalitarian interactions between men and women. |


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| Environment | ENVIRONMENTAL SCIENCE AND TECHNOLOGY (MC400ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |

| File Description | Document |
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| Any Additional Information | <u>View Document</u> |


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2019-20

| Category | Name of the Course | Relevance |
|--------------|--------------------------------------|---|
| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures.• Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab (MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC509) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design• To enable the students to keep their IP rights alive. |

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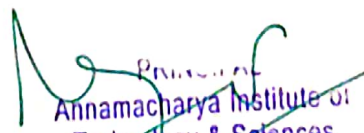
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| Environment | ENVIRONMENTAL SCIENCE (MC609) | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC300HS) | <ul style="list-style-type: none"> • To develop students' sensibility with regard to issues of gender in contemporary India. • To provide a critical perspective on the socialization of men and women. • To introduce students to information about some key biological aspects of genders. • To expose the students to debates on the politics and economics of work. • To help students reflect critically on gender violence. • To expose students to more egalitarian interactions between men and women. |
| Environment | Environmental Science and Technology (MC400ES) | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |
| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none"> • To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |

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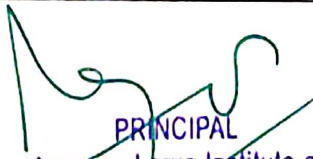
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2020-21

| Category | Name of the Course | Relevance |
|--------------|-------------------------------------|---|
| Constitution | CONSTITUTION OF INDIA(MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab(MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS(MC509) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design• To enable the students to keep their IP rights alive. |


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|-------------|--|---|
| Environment | ENVIRONMENTAL SCIENCE(MC609) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
| Gender | Gender Sensitization Lab (MC300HS) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Environment | Environmental Science and Technology (MC400ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

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College Code : T8
ESTD: 2005

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| Ethics | Professional Ethics (MC500HS) | <ul style="list-style-type: none">• To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives. |
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| File Description | Document |
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| Any Additional Information | View Document |

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2021-22

| Category | Name of the Course | Relevance |
|--------------|---------------------------------|---|
| Environment | Environmental Science (MC109ES) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA(MC309) | <ul style="list-style-type: none">• The Constitution of India is the supreme law of India.• Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.• The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society |
| Gender | Gender Sensitization Lab(MC409) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |


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|--------------|--------------------------------------|---|
| Intellectual | INTELLECTUAL PROPERTY RIGHTS (MC509) | <ul style="list-style-type: none"> • To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights • To identify the significance of practice and procedure of Patents • To make the students to understand the statutory provisions of different forms of IPRs in simple forms. • To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design • To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE (MC609) | <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures • Understanding the environmental policies and regulations |

| File Description | Document |
|----------------------------|-------------------------------|
| Any Additional Information | View Document |


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College Code: T8
ESTD: 2005

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9912344480

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2022-23

| Category | Name of the Course | Relevance |
|--------------|-------------------------------|--|
| Environment | Environmental Science (MC110) | <input type="checkbox"/> • Understanding the importance of ecological balance for sustainable development. <input type="checkbox"/> • Understanding the impacts of developmental activities and mitigation measures. <input type="checkbox"/> • Understanding the environmental policies and regulations |
| Constitution | CONSTITUTION OF INDIA (MC) | • Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective. <input type="checkbox"/> • To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism. <input type="checkbox"/> • To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution. |

Annamacharya Institute of
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Piglipur (V), Batasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-501 512.





College Code: T8
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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

Piglipur (V), Batasingaram (Post), Abdullapurmet(M), R R.Dist.,Hyderabad-501512.

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9912344480

Website: aits-hyd.org
E-mail: principaith@gmail.com

| | | |
|--------------|---|---|
| Gender | GENDER SENSITIZATION LABORATORY (MC) | <ul style="list-style-type: none">• To develop students' sensibility with regard to issues of gender in contemporary India.• To provide a critical perspective on the socialization of men and women.• To introduce students to information about some key biological aspects of genders.• To expose the students to debates on the politics and economics of work.• To help students reflect critically on gender violence.• To expose students to more egalitarian interactions between men and women. |
| Intellectual | INTELLECTUAL PROPERTY RIGHTS(MC) | <ul style="list-style-type: none">• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights• To identify the significance of practice and procedure of Patents• To make the students to understand the statutory provisions of different forms of IPRs in simple forms.• To learn the procedure of obtaining Patents, Copyrights, TradeMarks & Industrial Design• To enable the students to keep their IP rights alive. |
| Environment | ENVIRONMENTAL SCIENCE(MC) | <ul style="list-style-type: none">• Understanding the importance of ecological balance for sustainable development.• Understanding the impacts of developmental activities and mitigation measures• Understanding the environmental policies and regulations |

| File Description | Document |
|----------------------------|-------------------------------|
| Any Additional Information | View Document |

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

Piglipur, Batasingaram Panchayath, Hayath Nagar Mandal, Hyderabad, R.R. Dist. 501 512.

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Mobile : 9848924705

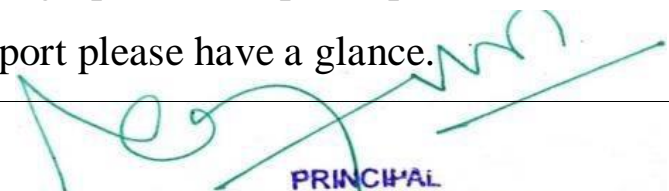
Website : aits-hyd.org

E-mail : principalaith@gmail.com

Fax : 08415-201688

ACTIVITY REPORT

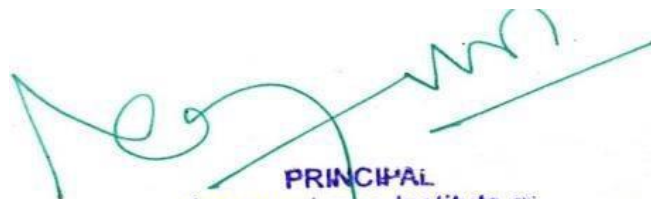
| | |
|----------------------------------|---|
| Name of the Activity | MASK DISTRIBUTION |
| Type of the Activity | SOCIAL SERVICE |
| Date and Time of Activity | DATE: 10/02/2022 & TIME:11:00 AM TO 01:00PM |
| Details of Participants | NUMBER OF STUDENTS PRESENT:110 |
| Coordinators | DR.K.SUNDER KUMARAND NSS VOLUNTEERS |
| Organizing Department | NSS CELL |
| Description | Generating the awareness amongst the people regarding the utility of masks in the fight against this pandemic situation. Mask distribution at kothagudem. AITS Group Executive Director Sri C. Abhishek Reddy joined the event as the Chief Guest. College Principal Dr. P.V Krishna Murthy. There was good response in all the volunteers and a gathering of donors made the event success. The photographs list of participants are attached to the report please have a glance. |


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Piglipur (V), Batasingaram (Post)
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PHOTOS



MASK DISTRIBUTION AT KOTHAGUDEM


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Pithapur (V), Batasingaram (Post)
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Fax : 08415-201688

AITSH/NSS/2021-2022

Date : 07/02/2022

To
The Principal
Annamacharya Institute of Technology & Sciences
Piglipur, Batasingaram,
Hyderabad.

Sub: Permission to conduct a program on "Mask Distribution" Reg;

Sir,

As a part of regular NSS activity, the AITS NSS Unit would like to conduct a program on "Mask Distribution" on 10/02/2022. In this regard we request you to permit us to conduct the program, please do the needful.

Thanking you.

PRINCIPAL
Annamacharya Institute of
Technology & Sciences
Piglipur (V), Batasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-501 512

Program Officer
AITS NSS Unit



College Code : T8
ESTD: 2005

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

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E-mail : principalaith@gmail.com
Fax : 08415-201688

AITSH/NSS/2021-2022

Date : 07/02/2022

CIRCULAR

It is hereby informed that our NSS Unit is organizing a program on "Mask Distribution" program as a part of regular NSS activity on **10/02/2022**. Interested staff members and students are requested to participate in the event and make it a grand success.

Program Officer

Principal

AITS NSS Unit

AITS

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Abdullapurmet (M), R.R. Dist. HYD-501 512



College Code : T8
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Fax : 08415-201688

AITS/NSS/2018-2019

Date: 28/12/2018

CIRCULAR

It is hereby informed that our NSS Unit is organizing a program on "Awariness on Hygene Food" on 03/01/2019 at Honey Bees Play School. Interested staff members and students are requested to participate in the event and make it a grand success.

Program Officer

Principal

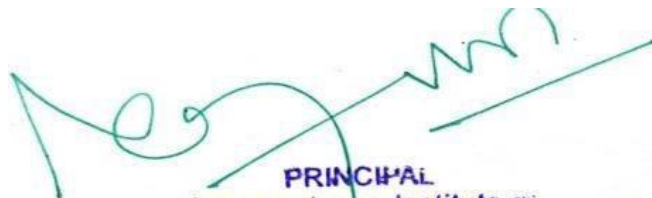
AITS NSS Unit

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Piglipur (V), Batasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-50* 582



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E-mail : principalaith@gmail.com
Fax : 08415-201688

AITS/NSS/2018-2019

Date:28-12-2018

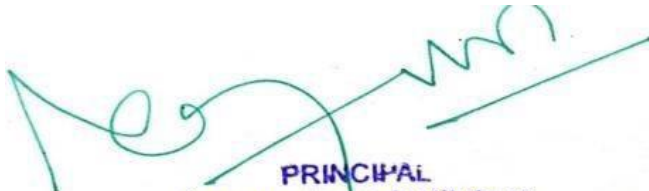
To
The Principal
Annamacharya Institute of Technology & Sciences
Piglipur, Batasingaram,
Hyderabad.

Sub: Permission for organizing "Awariness on Hygene Food".Reg;

Sir,

As a part of regular NSS activity, the AITS NSS Unit would like to conduct a program on "Awariness on Hygene Food" on 03/01/2019 at Honey Bees Play School, In this regard we request you to permit us to conduct the program, please do the needful.

Thanking you,


PRINCIPAL
Annamacharya Institute of
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Abdullapurmet (M), R.R. Dist. HYD-501 512

Program Officer
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Fax : 08415-201688

ACTIVITY REPORT

| | |
|----------------------------------|--|
| Name of the Activity | AWARNNESS ON HYGENE FOOD |
| Type of the Activity | SOCIETY SERVICE |
| Date and Time of Activity | DATE: 03/01/2019 & TIME:11:00 AM TO 03:00 PM |
| Details of Participants | NUMBER OF STUDENTS PRESENT:130 |
| Coordinators | DR.K.SUNDER KUMARAND NSS VOLUNTEERS |
| Organizing Department | NSS CELL |
| Description | AITs organized "Food Hygiene & Safety Awareness" at Honey Bees Play School on 3 rd January 2019. Students of B.Tech and participated College Principal Dr. P.V Krishna Murthy in these camps. Swacchta Awareness rally along with face-to-face discussion with street food vendors with respect to cleanliness in their shops, materials, serving utensils, |

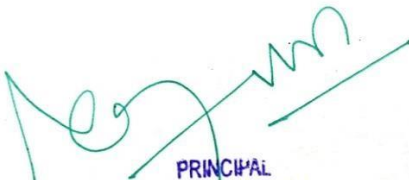
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Abdullapurmet (M), R.R. Dist. HYD-501 512

disposal of the garbage etc were conducted. NSS volunteers were also briefed about the importance of hygiene in food making and distribution places by programme officer.

PHOTO



AWARNNESS ON HYGENE FOOD AT HONEY BEES PLAY SCHOOL


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AITSH/NSS/2020-2021

Date : 14/02/2022

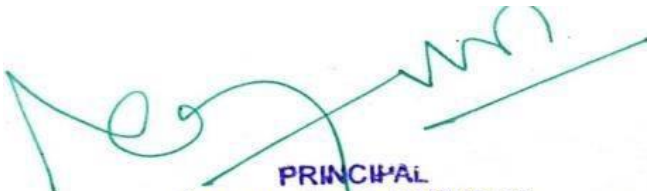
To
The Principal
Annamacharya Institute of Technology & Sciences
Piglipur, Batasingaram,
Hyderabad.

Sub: Permission to conduct a program on "Vaccines and Immunization Awareness" Reg;

Sir,

As a part of regular NSS activity, the AITS NSS Unit would like to conduct a program on "Vaccines and Immunization Awareness" on 21/02/2022. In this regard we request you to permit us to conduct the program, please do the needful.

Thanking you.


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Abdullapurmet (M), R.R. Dist. HYD-501 512

Program Officer
AITS NSS Unit



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ACTIVITY REPORT


| | |
|----------------------------------|---|
| Name of the Activity | VACCINES AND IMMUNIZATION AWARENESS |
| Type of the Activity | SOCIAL SERVICE |
| Date and Time of Activity | DATE: 21/02/2022 & TIME:11:00 AM TO 01:00PM |
| Details of Participants | NUMBER OF STUDENTS PRESENT:110 |
| Coordinators | DR.K.SUNDER KUMARAND NSS VOLUNTEERS |
| Organizing Department | NSS CELL |
| Description | Vaccines and Immunization Awareness at Piglipur. AITS Group Executive Director Sri C. Abhishek Reddy joined the event as the Chief Guest, College Principal Dr. P.V Krishna Murthy. Program highlighted the importance of vaccination and immunization for all the ages. The photographs are attached to the report please have a glance. |

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PHOTOS



**VACCINES AND IMMUNIZATION AWERENESS
AT PIGLIPUR**


PRINCIPAL
**Annamacharya Institute of
Technology & Sciences**
Piglipur (V), Bataasingaram (Post)
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AITSH/NSS/2020-2021

Date : 14/02/2022

CIRCULAR

It is hereby informed that our NSS Unit is organizing a program on "Vaccines and Immunization Awareness" as a part of regular NSS activity on 21/02/2022. Interested staff members and students are requested to participate in the event and make it a grand success.

Program Officer

Principal

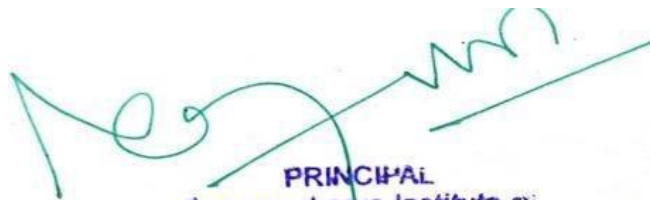
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ACTIVITY REPORT

| | |
|----------------------------------|--|
| Name of the Activity | YOGA DAY |
| Type of the Activity | SERVICE |
| Date and Time of Activity | DATE:21.06.2023 & TIME:10:00 AM TO 12:00PM |
| Details of Participants | NUMBER OF STUDENTS PRESENT:72 |
| Coordinators | DR.K.SUNDER KUMAR AND NSS VOLUNTEERS |
| Organizing Department | NSS CELL |
| Description | Annamacharya Institute of Technology & Sciences, Hyderabad-National Service Scheme (AITSH-NSS) unit cell organized Yoga Day. Yoga Day is celebrated among the youth to make them understand the importance of Yoga in their life. It helps the students understand how to maintain harmony between body and mind. Two lectures |

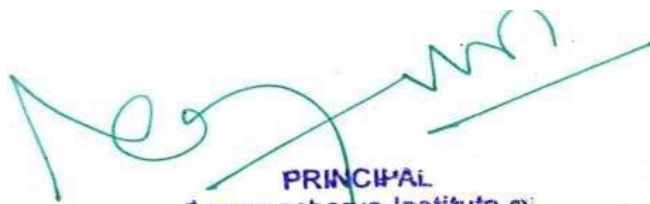
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Annamacharya Institute of
Technology & Sciences
Piglipur (V), Batasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-501 512

organized to explain the importance of Yoga. The Honorable Principal Dr. P.V Krishna Murthy inaugurated the program and spoke about importance of Yoga.

Photos



YOGA DAY AT AITS CAMPUS


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Pitapur (V), Betasingaram (Post)
Abdullapurmet (M), R.R. Dist. HYD-50* 585



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AITSH/NSS/2022-2023

Date: 19/06/2023

CIRCULAR

It is hereby informed that our NSS Unit is organizing a program on "Yoga Day" as a part of regular NSS activity on **21/06/2023**. Interested staff members and students are requested to participate in the event and make it a grand success.

Program Officer

Principal

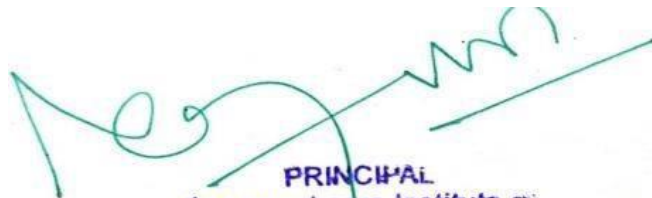
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AITSH/NSS/2022-2023

Date: 19-06-2023

To
The Principal
Annamacharya Institute of Technology & Sciences
Piglipur, Batasingaram,
Hyderabad.

Sub: Permission to conduct a program on "Yoga Day". Reg;

Sir,

As a part of regular NSS activity, the AITS NSS Unit would like to conduct a program on "Yoga Day" on **21/06/2023**. In this regard we request you to permit us to conduct the program, please do the needful.

Thanking you.

PRINCIPAL
Annamacharya Institute of
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Program Officer
AITS NSS Unit