



## CRITERION 1 – CURRICULAR ASPECTS

### Key Indicator- 1.3 Curriculum Enrichment

#### Metric Number: 1.3.1

**Institution integrates crosscutting issues relevant to professional Ethics, Gender Human Values, Environment and Sustainability in transacting the curriculum**

**Department of CSE/IS/AI ML**

**Academic Year 21-22**

Sl. No.	Professional Ethics		Total No. of Courses
	Course Code	Course Name	
1.	18CPC49	Constitution of India, Professional Ethics and Cyber Law	04
2.	18CS51	Management, Entrepreneurship for IT Industry	
<b>Environment &amp; Sustainability</b>			
3.	18CIV59	Environmental Studies	
4.	18ME651	Non-Conventional Energy Sources	

**B. E. Common to all Programmes  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
SEMESTER - III**

**CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (CPC)**

Course Code	<b>18CPC39/49</b>	CIE Marks	40
Teaching Hours/Week (L:T:P)	(1:0:0)	SEE Marks	60
Credits	01	Exam Hours	02

**Course Learning Objectives: To**

- know the fundamental political codes, structure, procedures, powers, and duties of Indian government institutions, fundamental rights, directive principles, and the duties of citizens
- Understand engineering ethics and their responsibilities; identify their individual roles and ethical responsibilities towards society.
- Know about the cybercrimes and cyber laws for cyber safety measures.

**Module-1**

**Introduction to Indian Constitution:**

The Necessity of the Constitution, The Societies before and after the Constitution adoption. Introduction to the Indian constitution, The Making of the Constitution, The Role of the Constituent Assembly - Preamble and Salient features of the Constitution of India. Fundamental Rights and its Restriction and limitations in different Complex Situations. Directive Principles of State Policy (DPSP) and its present relevance in our society with examples. Fundamental Duties and its Scope and significance in Nation building.

**Module-2**

**Union Executive and State Executive:**

Parliamentary System, Federal System, Centre-State Relations. Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism. State Executives – Governor, Chief Minister, State Cabinet, State Legislature, High Court and Subordinate Courts, Special Provisions (Articles 370,371,371J) for some States.

**Module-3**

**Elections, Amendments and Emergency Provisions:**

Elections, Electoral Process, and Election Commission of India, Election Laws. Amendments - Methods in Constitutional Amendments (How and Why) and Important Constitutional Amendments. Amendments – 7,9,10,12,42,44, 61, 73,74, ,75, 86, and 91,94,95,100,101,118 and some important Case Studies. Emergency Provisions, types of Emergencies and its consequences.

**Constitutional special provisions:**

Special Provisions for SC and ST, OBC, Women, Children and Backward Classes.

**Module-4**

**Professional / Engineering Ethics:**

Scope & Aims of Engineering & Professional Ethics - Business Ethics, Corporate Ethics, Personal Ethics. Engineering and Professionalism, Positive and Negative Faces of Engineering Ethics, Code of Ethics as defined in the website of Institution of Engineers (India): Profession, Professionalism, and Professional Responsibility. Clash of Ethics, Conflicts of Interest. Responsibilities in Engineering Responsibilities in Engineering and Engineering Standards, the impediments to Responsibility. Trust and Reliability in Engineering, IPRs (Intellectual Property Rights), Risks, Safety and liability in Engineering

**Module-5**

**Internet Laws, Cyber Crimes and Cyber Laws:**

Internet and Need for Cyber Laws, Modes of Regulation of Internet, Types of cyber terror capability, Net neutrality, Types of Cyber Crimes, India and cyber law, Cyber Crimes and the information Technology Act 2000, Internet Censorship. Cybercrimes and enforcement agencies.

**Course Outcomes:** On completion of this course, students will be able to,  
 CO 1: Have constitutional knowledge and legal literacy.  
 CO 2: Understand Engineering and Professional ethics and responsibilities of Engineers.  
 CO 3: Understand the the cybercrimes and cyber laws for cyber safety measures.

**Question paper pattern for SEE and CIE:**

- The SEE question paper will be set for 100 marks and the marks scored by the students will proportionately be reduced to 60. The pattern of the question paper will be objective type (MCQ).
- For the award of 40 CIE marks, refer the University regulations 2018.

Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Constitution of India, Professional Ethics and Human Rights	Shubham Singles, Charles E. Haries, and et al	Cengage Learning India	2018
2	Cyber Security and Cyber Laws	Alfred Basta and et al	Cengage Learning India	2018
<b>Reference Books</b>				
3	Introduction to the Constitution of India	Durga Das Basu	Prentice –Hall,	2008.
4	Engineering Ethics	M. Govindarajan, S. Natarajan, V. S. Senthilkumar	Prentice –Hall,	2004

<b>MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY</b>			
[As per Choice Based Credit System (CBCS) scheme]			
(Effective from the academic year 2016 -2017)			
SEMESTER – V			
Subject Code	18CS51	IA Marks	20
Number of Lecture Hours/Week	4	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03
CREDITS – 04			
<b>Course objectives:</b> This course will enable students to			
<ul style="list-style-type: none"> <li>• Explain the principles of management, organization and entrepreneur.</li> <li>• Discuss on planning, staffing, ERP and their importance</li> <li>• Infer the importance of intellectual property rights and relate the institutional support</li> </ul>			
Module – 1			Teaching Hours
<b>Introduction</b> - Meaning, nature and characteristics of management, scope and Functional areas of management, goals of management, levels of management, brief overview of evolution of management theories,. Planning- Nature, importance, types of plans, steps in planning, Organizing- nature and purpose, types of Organization, Staffing- meaning, process of recruitment and selection			<b>10 Hours</b>
Module – 2			Teaching Hours
<b>Directing and controlling-</b> meaning and nature of directing, leadership styles, motivation Theories, Communication- Meaning and importance, Coordination- meaning and importance, Controlling- meaning, steps in controlling, methods of establishing control.			<b>10 Hours</b>
Module – 3			Teaching Hours
<b>Entrepreneur</b> – meaning of entrepreneur, characteristics of entrepreneurs, classification and types of entrepreneurs, various stages in entrepreneurial process, role of entrepreneurs in economic development, entrepreneurship in India and barriers to entrepreneurship. Identification of business opportunities, market feasibility study, technical feasibility study, financial feasibility study and social feasibility study.			<b>10 Hours</b>
Module – 4			Teaching Hours
<b>Preparation of project and ERP</b> - meaning of project, project identification, project selection, project report, need and significance of project report, contents, formulation, guidelines by planning commission for project report, <b>Enterprise Resource Planning: Meaning and Importance-</b> ERP and Functional areas of Management – Marketing / Sales- Supply Chain Management – Finance and Accounting – Human Resources – Types of reports and methods of report generation			<b>10 Hours</b>
Module – 5			Teaching Hours
<b>Micro and Small Enterprises:</b> Definition of micro and small enterprises, characteristics and advantages of micro and small enterprises, steps in establishing micro and small enterprises, Government of India industrial policy 2007 on micro and small enterprises, case study (Microsoft), Case study(Captain G R Gopinath),case study (N R Narayana Murthy & Infosys), <b>Institutional support:</b> MSME-DI, NSIC, SIDBI, KIADB, KSSIDC, TECSOK, KSFC, DIC and District level single window agency, <b>Introduction to IPR.</b>			<b>10 Hours</b>
<b>Course outcomes:</b> The students should be able to:			
<ul style="list-style-type: none"> <li>• Define management, organization, entrepreneur, planning, staffing, ERP and outline</li> </ul>			

their importance in entrepreneurship

- Utilize the resources available effectively through ERP
- Make use of IPRs and institutional support in entrepreneurship

**Question paper pattern:**

The question paper will have TEN questions.

There will be TWO questions from each module.

Each question will have questions covering all the topics under a module.

The students will have to answer FIVE full questions, selecting ONE full question from each module.

**Text Books:**

1. Principles of Management -P. C. Tripathi, P. N. Reddy; Tata McGraw Hill, 4th / 6<sup>th</sup> Edition, 2010.
2. Dynamics of Entrepreneurial Development & Management -Vasant Desai Himalaya Publishing House.
3. Entrepreneurship Development -Small Business Enterprises -Poornima M Charantimath Pearson Education – 2006.
4. Management and Entrepreneurship - Kanishka Bedi- Oxford University Press-2017

**Reference Books:**

1. Management Fundamentals -Concepts, Application, Skill Development Robert Lusier – Thomson.
2. Entrepreneurship Development -S S Khanka -S Chand & Co.
3. Management -Stephen Robbins -Pearson Education /PHI -17th Edition, 2003

**B.E IN CIVIL ENGINEERING(CV-2018-19)**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**SEMESTER – V**

**ENVIRONMENTAL STUDIES**

Course Code	<b>18CIV59</b>	CIE Marks	40
Teaching Hours / Week (L:T:P)	(1:0:0)	SEE Marks	60
Credits	01	Exam Hours	02

**Module - 1**

**Ecosystems** (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake.  
**Biodiversity:** Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

**Module - 2**

**Advances in Energy Systems** (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.  
**Natural Resource Management** (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.

**Module - 3**

**Environmental Pollution** (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.  
**Waste Management & Public Health Aspects:** Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.

**Module - 4**

**Global Environmental Concerns** (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.

**Module - 5**

**Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications):** G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs.

**Field work:** Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.

**Course outcomes:** At the end of the course, students will be able to:

- CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
- CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
- CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
- CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

**Question paper pattern:**

- The Question paper will have 100 objective questions.
- Each question will be for 01 marks
- Student will have to answer all the questions in an OMR Sheet.
- The Duration of Exam will be 2 hours.

Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Environmental Studies	Benny Joseph	Tata Mc Graw – Hill.	2 <sup>nd</sup> Edition, 2012

2.	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3 <sup>rd</sup> Edition· 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
<b>Reference Books</b>				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2 <sup>nd</sup> Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11 <sup>th</sup> Edition, 2006
3	Text Book of Environmental and Ecology	Pratiba Sing, AnoopSingh& PiyushMalaviya	Acme Learning Pvt. Ltd. New Delhi.	1 <sup>st</sup> Edition

<b>B. E. MECHANICAL ENGINEERING</b> <b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b> <b>SEMESTER –VI</b> <b>OPEN ELECTIVE A</b>			
<b>NON CONVENTIONAL ENERGY SOURCES</b>			
Course Code	<b>18ME651</b>	CIE Marks	40
Teaching Hours/Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b>			
<ul style="list-style-type: none"> <li>• To introduce the concepts of solar energy, its radiation, collection, storage and application.</li> <li>• To introduce the concepts and applications of Wind energy, Biomass energy, Geothermal energy and Ocean energy as alternative energy sources.</li> <li>• To explore society's present needs and future energy demands.</li> <li>• To examine energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, etc.</li> <li>• To get exposed to energy conservation methods.</li> </ul>			
<b>Module-1</b>			
<p><b>Introduction:</b> Energy source, India's production and reserves of commercial energy sources, need for non-conventional energy sources, energy alternatives, solar, thermal, photovoltaic. Water power, wind biomass, ocean temperature difference, tidal and waves, geothermal, tar sands and oil shale, nuclear (Brief descriptions); advantages and disadvantages, comparison (Qualitative and Quantitative).</p> <p><b>Solar Radiation:</b> Extra-Terrestrial radiation, spectral distribution of extra terrestrial radiation, solar constant, solar radiation at the earth's surface, beam, diffuse and global radiation, solar radiation data.</p> <p><b>Measurement of Solar Radiation:</b> Pyrometer, shading ring pyrheliometer, sunshine recorder, schematic diagrams and principle of working.</p>			
<b>Module-2</b>			
<p><b>Solar Radiation Geometry:</b> Flux on a plane surface, latitude, declination angle, surface azimuth angle, hour angle, zenith angle, solar altitude angle expression for the angle between the incident beam and the normal to a plane surface (No derivation) local apparent time. Apparent motion of sun, day length, numerical examples.</p> <p><b>Radiation Flux on a Tilted Surface:</b> Beam, diffuse and reflected radiation, expression for flux on a tilted surface (no derivations) numerical examples.</p> <p><b>Solar Thermal Conversion:</b> Collection and storage, thermal collection devices, liquid flat plate collectors, solar air heaters concentrating collectors (cylindrical, parabolic, paraboloid) (Quantitative analysis); sensible heat storage, latent heat storage, application of solar energy water heating. Space heating and cooling, active and passive systems, power generation, refrigeration. Distillation (Qualitative analysis) solar pond, principle of</p>			
<b>Module-3</b>			
<p><b>Performance Analysis of Liquid Flat Plate Collectors:</b> General description, collector geometry, selective surface (qualitative discussion) basic energy-balance equation, stagnation temperature, transmissivity of the cover system, transmissivity – absorptivity product, numerical examples. The overall loss coefficient, correlation for the top loss coefficient, bottom and side loss coefficient, problems (all correlations to be provided). Temperature distribution between the collector tubes, collector heat removal factor, collector efficiency factor and collector flow factor, mean plate temperature, instantaneous efficiency (all expressions to be provided). Effect of various parameters on the collector performance; collector orientation, selective surface, fluid inlet temperature, number covers, dust.</p> <p><b>Photovoltaic Conversion:</b> Description, principle of working and characteristics, application.</p>			
<b>Module-4</b>			
<p><b>Wind Energy :</b> Properties of wind, availability of wind energy in India, wind velocity and power from wind; major problems associated with wind power, wind machines; Types of wind machines and their characteristics, horizontal and vertical axis wind mills, elementary design principles; coefficient of performance of a wind mill rotor, aerodynamic considerations of wind mill design, numerical examples.</p>			



<p><b>Tidal Power:</b> Tides and waves as energy suppliers and their mechanics; fundamental characteristics of tidal power, harnessing tidal energy, limitations.</p> <p><b>Ocean Thermal Energy Conversion:</b> Principle of working, Rankine cycle, OTEC power stations in the world, problems associated with OTEC.</p>				
<b>Module-5</b>				
<p><b>Geothermal Energy Conversion:</b> Principle of working, types of geothermal station with schematic diagram, geothermal plants in the world, problems associated with geothermal conversion, scope of geothermal energy.</p> <p><b>Energy from Bio Mass:</b> Photosynthesis, photosynthetic oxygen production, energy plantation, bio gas production from organic wastes by anaerobic fermentation, description of bio-gas plants, transportation of bio-gas, problems involved with bio-gas production, application of bio-gas, application of bio-gas in engines, advantages.</p> <p><b>Hydrogen Energy:</b> Properties of Hydrogen with respected to its utilization as a renewable form of energy, sources of hydrogen, production of hydrogen, electrolysis of water, thermal decomposition of water, thermo chemical production bio-chemical production.</p>				
<p><b>Course Outcomes:</b> At the end of the course, the student will be able to:</p> <p>CO1: Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations.</p> <p>CO2: Know the need of renewable energy resources, historical and latest developments.</p> <p>CO3: Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc.</p> <p>CO4: Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.</p> <p>CO5: Understand the concept of Biomass energy resources and their classification, types of biogas Plants-applications</p> <p>CO6: Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations.</p> <p>CO7: Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications.</p>				
<p><b>Question paper pattern:</b></p> <ul style="list-style-type: none"> <li>• The question paper will have ten full questions carrying equal marks.</li> <li>• Each full question will be for 20 marks.</li> <li>• There will be two full questions (with a maximum of four sub- questions) from each module.</li> <li>• Each full question will have sub- question covering all the topics under a module.</li> <li>• The students will have to answer five full questions, selecting one full question from each module.</li> </ul>				
Sl. No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Non-Convention Energy Resources	B H Khan	McGraw Hill Education (India) Pvt. Ltd.	3 <sup>rd</sup> Edition
2	Solar energy	Subhas P Sukhatme	Tata McGraw Hill	2 <sup>nd</sup> Edition, 1996.
3	Non-Conventional Energy Sources	G.D Rai	Khanna Publishers	2003
<b>Reference Books</b>				
1	Renewable Energy Sources and Conversion Technology	N.K.Bansal, Manfred Kleeman&MechaelMeliss	Tata McGraw Hill.	2004
2	Renewable Energy Technologies	Ramesh R & Kumar K U	Narosa Publishing House New Delhi	
3	Conventional Energy Systems	K M, Non	Wheeler Publishing Co. Ltd., New Delhi	2003



## CRITERION 1 – CURRICULAR ASPECTS

### Key Indicator – 1.3 Curriculum Enrichment

#### Metric Number: 1.3.1

Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum

### **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

ACADEMIC YEAR 2021-22

SL NO.	Professional Ethics		Total No. of Courses
	COURSE CODE	COURSE NAME	
1	21CIP37/47	Constitution of India, Professional Ethics	04
2	18ES51	Technological Innovation Management & Entrepreneurship	
<b>Human Values</b>			
3	21SCR36	Social Connect & Responsibility	
<b>Environment &amp; Sustainability</b>			
4	18CIV59	Environmental Studies	

## III/IV Semester

<b>Constitution of India and Professional Ethics (CIP)</b>			
<b>Course Code</b>	<b>21CIP37/47</b>	<b>CIE Marks</b>	<b>50</b>
<b>Teaching Hours/Week (L:T:P: S)</b>	<b>L:0,T:2,P:0 = 02 Hours</b>	<b>SEE Marks</b>	<b>50</b>
<b>Total Hours of Pedagogy</b>	<b>02 Hours/Week</b>	<b>Total Marks</b>	<b>100</b>
<b>Credits</b>	<b>01</b>	<b>Exam Hours</b>	<b>01 Hours</b>
<p><b>Course objectives:</b> This course will enable the students</p> <ol style="list-style-type: none"> <li>To know about the basic structure of Indian Constitution.</li> <li>To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.</li> <li>To know about our Union Government, political structure &amp; codes, procedures.</li> <li>To know the State Executive &amp; Elections system of India.</li> <li>To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.</li> </ol>			
<p><b>Teaching-Learning Process</b>            These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.</p> <p>(i) Direct instructional method ( Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools), (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.</p> <p>Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.</p>			
<b>Module - 1</b>			
<p><b>Introduction to Indian Constitution:</b> The Necessity of the Constitution, The Societies before and after the Constitution adoption. Introduction to the Indian constitution, The Making of the Constitution, The Role of the Constituent Assembly. The Preamble of Indian Constitution &amp; Key concepts of the Preamble. Salient features of India Constitution.</p>			
<b>Module - 2</b>			
<p><b>FR's, FD's and DPSP's:</b> Fundamental Rights and its Restriction and limitations in different Complex Situations. Directive Principles of State Policy (DPSP) and its present relevance in our society with examples. Fundamental Duties and its Scope and significance in Nation building.</p>			
<b>Module - 3</b>			
<p><b>Union Executive :</b> Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism.</p>			
<b>Module - 4</b>			
<p><b>State Executive &amp; Elections, Amendments and Emergency Provisions:</b> State Executive, Election Commission, Elections &amp; Electoral Process. Amendment to Constitution (How and Why) and Important Constitutional Amendments till today. Emergency Provisions.</p>			
<b>Module-5</b>			
<p><b>Professional Ethics:</b> Ethics &amp; Values. Types of Ethics. Scope &amp; Aims of Professional &amp; Engineering Ethics. Positive and Negative Faces of Engineering Ethics. Clash of Ethics, Conflicts of Interest. The impediments to Responsibility. Trust &amp; Reliability in Engineering, IPRs (Intellectual Property Rights), Risks, Safety and liability in Engineering.</p>			
<p><b>Course outcome (Course Skill Set) :</b>            At the end of the course the student will be able to :</p>			
C01	Analyse the basic structure of Indian Constitution.		
C02	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.		
C03	know about our Union Government, political structure & codes, procedures.		
C04	Understand our State Executive & Elections system of India.		
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.		

**Assessment Details (both CIE and SEE)**

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% ( 18 Marks out of 50)in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

**Continuous Internal Evaluation:**

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5<sup>th</sup> week of the semester
2. Second test at the end of the 10<sup>th</sup> week of the semester
3. Third test at the end of the 15<sup>th</sup> week of the semester

Two assignments each of **10 Marks**

4. First assignment at the end of 4<sup>th</sup> week of the semester
5. Second assignment at the end of 9<sup>th</sup> week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13<sup>th</sup> week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks

**Total CIE : IA  $20 \times 3 = 60$ , Assignment  $10 + 10 = 20$ , Quiz  $20 = 100 / 2 = 50$**

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

**CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.**

**Semester End Examination:**

SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject **(duration 02 hours)**

1. The question paper will have 50 questions. Each question is set for 01 mark.
2. Semester End Exam (SEE) Pattern will be in MCQ Model (Multiple Choice Questions) for 50 marks (60 minutes duration).

**Suggested Learning Resources:****Textbook:**

1. **"Constitution of India" (for Competitive Exams)** - Published by Naidhruva Edutech Learning Solutions, Bengaluru. – 2022.
2. **"Engineering Ethics"**, M.Govindarajan, S.Natarajan, V.S.Senthilkumar, Prentice –Hall, 2004.

**Reference Books:**

1. **"Samvidhana Odu" - for Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kerekon.**
2. **"Constitution of India, Professional Ethics and Human Rights"** by Shubham Singles, Charles E. Haries, and et al: published by Cengage Learning India, Latest Edition – 2019.
3. **"Introduction to the Constitution of India"**, (Students Edition.) by Durga Das Basu (**DD Basu**): Prentice –Hall, 2008.
4. **"The Constitution of India"** by Merunandan K B: published by Merugu Publication, Second Edition, Bengaluru.

## SEMESTER-V

### TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP

Course Code	: 18ESS1	CIE Marks :40
Lecture Hours/Week	:03	SEE Marks:60
Total Number of Lecture Hours : 40 (08 Hours /Module)		Exam Homs:03
CREDITS 0J		

Course Learning Objectives: This course will enable students to:

- Understand basic skills of Management
- Understand the need for Entrepreneurs and their skills
- Identify the Management functions and Social responsibilities
- Understand the Ideation Process, creation of Business Model, Feasibility Study and sources of funding

#### Module-1

Management: Nature and Functions of Management-Importance, Definition, Management Functions, Levels of Management, Roles of Manager, Managerial Skills, Management & Administration, Management as a Science, Art & Profession (Selected topics of Chapter 1, Text 1).

Planning: Planning-Nature, Importance, Types, Steps and Limitations of Planning; Decision Making-Meaning, Types and Steps in Decision Making (Selected topics from Chapters 4 & 5, Text 1). L1, L2

#### Module-2

Organizing and Staffing: Organization-Meaning, Characteristics, Process of Organizing, Principles of Organizing, Span of Management (meaning and importance only), Departmentalisation, Committees-Meaning, Types of Committees; Centralization Vs Decentralization of Authority and Responsibility; Staffing-Need and Importance, Recruitment and Selection Process (Selected topics from Chapters 7, 8 & 11, Text 1).

Directing and Controlling: Meaning and Requirements of Effective Direction, Giving Orders; Motivation-Nature of Motivation, Motivation Theories (Maslow's Need-Hierarchy Theory and Herzberg's Two Factor Theory); Communication – Meaning, Importance and Purposes of Communication; Leadership-Meaning, Characteristics, Behavioural Approach of Leadership;

Coordination-Meaning, Types, Techniques of Coordination; Controlling-Meaning, Need for Control System, Benefits of Control, Essentials of Effective Control System, Steps in Control Process  
(Selected topics from Chapters 15 to 18 and 9, Text 1). L1, L1

### Module-3

Social Responsibilities of Business: Meaning of Social Responsibility, Social Responsibilities of Business towards Different Groups, Social Audit, Business Ethics and Corporate Governance (Selected topics from Chapter 3, Text 1).  
Entrepreneurship: Definition of Entrepreneur, Importance of Entrepreneurship, concepts of Entrepreneurship, Characteristics of successful Entrepreneur, Classification of Entrepreneurs, Myths of Entrepreneurship, Entrepreneurial Development models, Entrepreneurial development cycle, Problems faced by Entrepreneurs and capacity building for Entrepreneurship (Selected topics from Chapter 2, Text 2). L1, L1

### Module 4

Family Business: Role and Importance of Family Business, Contributions of Family Business in India, Stages of Development of a Family Business, Characteristics of a Family-owned Business in India, Various types of family businesses (Selected topics from Chapter 4, (Page 71-75) Text 2).  
Idea Generation and Feasibility Analysis- Idea Generation; Creativity and Innovation; Identification of Business Opportunities; Market Entry Strategies; Marketing Feasibility; Financial Feasibilities; Political Feasibilities; Economic Feasibility; Social and Legal Feasibilities; Technical Feasibilities; Managerial Feasibility, Location and Other Utilities Feasibilities. (Selected topics from Chapter 6 (Page No. 111-117) & Chapter 7 (Page No. 140-142), Text 2)  
L1, L2

### Module-5

Business model-Meaning, designing, analyzing and improvising; Business Plan – Meaning, Scope and Need; Financial, Marketing, Human Resource and Production/Service Plan; Business plan Formats; Project report preparation and presentation; Why some Business Plan fails? (Selected topics from Chapter 8 (Page No 159-164, Text 2)  
Financing and How to start a Business? Financial opportunity identification; Banking sources; Nonbanking Institutions and Agencies; Venture Capital – Meaning and Role in Entrepreneurship; Government Schemes for funding business; Pre launch, Launch and Post launch requirements; Procedure for getting License and Registration; Challenges and Difficulties in Starting an Enterprise (Selected topics from Chapter 7 (Page No 147-149), Chapter 5 (Page No 93-99) & Chapter 8 (Page No. 166-172) Text 2)  
Project Design and Network Analysis: Introduction, Importance of Network

Analysis, Origin of PERT and CPM, Network, Network Techniques, Need for Network Techniques, Steps in PERT, CPM, Advantages, Limitations and Differences.

(Selected topics from Chapters 20, Text 3).

L1,L2,L3

Course Outcomes: After studying this course, students will be able to:

1. Understand the fundamental concepts of Management and Entrepreneurship and opportunities in order to setup a business
2. Identify the various organizations' architecture
3. Describe the functions of Managers, Entrepreneurs and their social responsibilities
4. Understand the components in developing a business plan
5. Recognize the various sources of funding and institutions supporting entrepreneurs

Text Books:

1. Principles of Management – P.C Tripathi, P.N Reddy, McGraw Hill Education, 10th Edition, 2017. ISBN-13:978-93-5260-5354.
2. Entrepreneurship Development Small Business Enterprises- Poomima M Charantimath, Pearson Education 2008, ISBN 978-81-7758-260-4.
3. Dynamics of Entrepreneurial Development and Management by Vasant Desai. HPH 2007, ISBN: 978-81-8488-801-2.
4. Robert D. Hisrich, Mathew J. Manimala, Michael P Peters and Dean A. Shepherd, "Entrepreneurship", 5th Edition, Tata Mc-Graw Hill Publishing Co. Ltd.- New Delhi, 2012

Reference Book:

1. Essentials of Management: An International, Innovation and Leadership perspective by Harold Koontz, Heinz Weihrich McGraw Hill Education, 10th Edition 2016. ISBN- 978-93-392-2286-4.

<b>SOCIAL CONNECT &amp; RESPONSIBILITIES</b>			
Course Code	<b>21SCR36</b>	CIE Marks	50
Teaching Hours week (L:T:P:S)	1: 0: 0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	03
Department	Management Studies / Engineering Department		
Offered for	3 <sup>rd</sup> Semester		
Prerequisite	Nil		
<p>Objectives: The Course will</p> <ul style="list-style-type: none"> <li>• Enable the student to do a deep drive into societal challenges being addressed by NGO(s), social enterprises &amp; The government and build solutions to alleviate these complex social problems through immersion, design &amp; technology.</li> <li>• Provide a formal platform for students to communicate and connect with their surroundings.</li> <li>• Enable to create of a responsible connection with society.</li> </ul>			
<p>Learning Outcomes: The students are expected to have the ability to :</p> <ol style="list-style-type: none"> <li>1. Understand social responsibility</li> <li>2. Practice sustainability and creativity</li> <li>3. Showcase planning and organizational skills</li> </ol>			
<p>Contents:</p> <p>The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellow human beings, nature, society, and the world at large. The course will engage students in interactive sessions, open mic, reading groups, storytelling sessions, and semester-long activities conducted by faculty mentors. In the following a set of activities planned for the course have been listed :</p>			
<b>Module-I</b>			
Plantation and adoption of a tree: Plantation of a tree that will be adopted for four years by a group of B.Tech. students. They will also make an excerpt either as a documentary or a photoblog describing the plant's origin, its usage in daily life, and its appearance in folklore and literature.			
<b>Module-II</b>			
Heritage walk and crafts corner: Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photoblog and documentary on evolution and practice of various craft forms.			
<b>Module-III</b>			
Organic farming and waste management: usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus.			
<b>Module-IV</b>			
Water Conservation: knowing the present practices in the surrounding villages and			



implementation in the campus, documentary or photo blog presenting the current practices.								
<b>Module-V</b>								
Food Walk City's culinary practices, food lore, and indigenous materials of the region used in cooking.								
<p><b>Activities</b></p> <p>Jamming session, open mic, and poetry: Platform to connect to others. Share the stories with others. Share the experience of Social Connect. Exhibit the talent like playing instruments, singing, one-act play, art-painting, and fine art.</p> <p><b>PEDAGOGY</b></p> <p>The pedagogy will include interactive lectures, inspiring guest talks, field visits, social immersion, and a course project. Applying and synthesizing information from these sources to define the social problem to address and take up the solution as the course project, with your group. Social immersion with NGOs/social sections will be a key part of the course. Will all lead to the course project that will address the needs of the social sector?</p> <p><b>COURSE TOPICS:</b></p> <p>The course will introduce social context and various players in the social space, and present approaches to discovering and understanding social needs. Social immersion and inspiring conversational will culminate in developing an actual, idea for problem-based intervention, based on an in-depth understanding of a key social problem.</p> <p>A total of 14-20 hrs engagement per semester is required for the 3<sup>rd</sup> semester of the B.E. /B.Tech. program. The students will be divided into 10 groups of 35 each. Each group will be handled by two faculty mentors. Faculty mentors will design the activities (particularly Jamming sessions open mic, and poetry)</p> <p>Faculty mentors has to design the evaluation system.</p> <p><b>Guideline for Assessment Process:</b>  <b>Continuous Internal Evaluation (CIE)</b>  After completion of, the social connect, the student shall prepare, with daily diary as reference, a comprehensive report in consultation with the mentor/s to indicate what he has observed and learned in the social connect period. The report should be signed by the mentor. The report shall be evaluated on the basis of the following criteria and/or other relevant criteria pertaining to the activity completed.</p> <ul style="list-style-type: none"> <li>Marks allotted for the diary are out of 50.</li> <li>Planning and scheduling the social connect</li> <li>Information/Data collected during the social connect</li> <li>Analysis of the information/data and report writing</li> </ul> <p>Considering all above points allotting the marks as mentioned below-</p> <table border="1"> <tr> <td>Excellent</td> <td>80 to 100</td> </tr> <tr> <td>Good</td> <td>60 to 79</td> </tr> <tr> <td>Satisfactory</td> <td>40 to 59</td> </tr> <tr> <td>Unsatisfactory and fail</td> <td>&lt;39</td> </tr> </table>	Excellent	80 to 100	Good	60 to 79	Satisfactory	40 to 59	Unsatisfactory and fail	<39
Excellent	80 to 100							
Good	60 to 79							
Satisfactory	40 to 59							
Unsatisfactory and fail	<39							

APPR-20.09.2022

(Common for B.E. (21SCR36), B. Plan.(21UH36/21SCR36), B.Arch.(21UH39/21SCR36) and B.Sc (21BS39/21SCR36)

**Semester End Examination (SEE)**

This Jamming session will be conducted at the end of the course for 50 marks

Jamming session includes -Platform to connect to others. Share the stories with others. Share the experience of Social Connect. Exhibit the talent like playing instruments, singing, one-act play, art painting, and fine art.

Faculty mentor has to design the evaluation system for the Jamming session.

Pedagogy (Guidelines) may differ depending on local resources available for the study

Module	Topic	Content	Group Size	Location	Magnitude	Activity	Reporting	Evaluation
I	Plantation and adoption of a tree	Plantation of a tree that will be adopted for four years by a group of B.Tech. students. They will also make an excerpt either as a documentary or a photoblog describing the plant's origin, its usage in daily life, and its appearance in folklore and literature.	03 – 05	Farmers Land or Road side or Community area or institution's campus, any one location to be selected.	One  Students must monitor it for three years	Site selection  Select suitable species in consultation with horticulture, forest or agriculture department. Interact with NGO/Industry and community to plant Tag the plant for continuous monitoring	Report shall be handwritten or blog with paintings, sketches, poster, video and/or photograph with Geo tag.	Each module is evaluated for 50 Marks and average of all the five modules will be the final marks.  <b>CIE Rubrics for 50 M</b>  Planning and scheduling the social connect – 15 M  Information/Data collected during the social connect – 15 M  Analysis of the information/data and report writing – 20 M
II	Heritage walk and crafts corner	Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photoblog and documentary on evolution and practice of various craft forms.	03 - 05	Preferably Within the city where institution is located or home town of the student group	One or two  One can be a structure or a heritage building the other can be heritage custom or practise	Survey in the form of questioner by connecting to the people and asking. No standard questioner to be given by faculty and has to be evolved involving students. Questions during survey can be asked in local language but report language is English.		
III	Waste management	Wet waste management in neighbouring villages, and implementation in the campus.	03 - 05  More than one group can be	Preferably in the nearby villages and within the campus.	One	Report on importance and benefits of Waste management. Report on segregation, collection, transportation and disposal.		<b>SEE 50 M:</b> Presentation, Jamming session, Open mic, Group

			assigned one task based on magnitude of task.			<p>Suggestion for composting.</p> <p>Visit nearby village/location to sensitize farmers and public about waste management and also document current practises.</p>		discussion and debate.
III	Organic farming	Usefulness of organic farming in neighbouring villages, and implementation in the campus.	03 – 05	<p>Visit to farming lands where organic farming is going on</p> <p>Campus Garden</p> <p>Roof top Garden or Vertical Garden or hydroponics if land is scarce.</p>	One	<p>Collect data on organic farming in the vicinity. Like types of crop, methodology etc.,</p> <p>Suggestion for implementation at selected locations</p>		
IV	Water Conservation	Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photo blog presenting the current practices.	03 – 05	Rain water harvesting demonstration available in the campus or surroundings	One	<p>Visit lakes/pond/river/dry well to involve on rejuvenation activity.</p> <p>Or</p> <p>Assessment of Water budget in the campus/village</p>		

						Report on traditional water conservation practices (to minimize wastage)		
V	Food Walk	City's culinary practices, food lore, and indigenous materials of the region used in cooking.	03 - 05	Within the city where institution is located  Food culture of student's resident region	One	Survey local food centres and identify the speciality  Identify and study the food ingredients  Report on the regional foods  Report on Medicinal values of the local food grains, and plants.		

\*\*Important recommendations requested; Special Appreciation from institution and university for students who take care of plants for three years.

**B.E IN CIVIL ENGINEERING(CV-2018-19) Outcome Based Education  
(OBE) and Choice Based Credit System (CBCS) SEMESTER – V**

**ENVIRONMENTAL STUDIES**

Course Code	<b>18CIV59</b>	CIE Marks	40	
Teaching Hours / Week (L:T:P)	(1:0:0)	SEE Marks	60	
Credits	01	Exam Hours	02	
<b>Module - 1</b>				
Ecosystems (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake. Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.				
<b>Module - 2</b>				
Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind. Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.				
<b>Module - 3</b>				
Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution. Waste Management & Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.				
<b>Module - 4</b>				
Global Environmental Concerns (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.				
<b>Module - 5</b>				
Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs. Field work: Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.				
Course outcomes: At the end of the course, students will be able to: <ul style="list-style-type: none"> <li>• CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,</li> <li>• CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.</li> <li>• CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.</li> <li>• CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.</li> </ul>				
Question paper pattern: <ul style="list-style-type: none"> <li>• The Question paper will have 100 objective questions.</li> <li>• Each question will be for 01 marks</li> <li>• Student will have to answer all the questions in an OMR Sheet.</li> <li>• The Duration of Exam will be 2 hours.</li> </ul>				
Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Environmental Studies	Benny Joseph	Tata Mc Graw – Hill.	2 <sup>nd</sup> Edition, 2012

2.	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3 <sup>rd</sup> Edition' 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
Reference Books				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2 <sup>nd</sup> Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11 <sup>th</sup> Edition, 2006
3	Text Book of Environmental and Ecology	Pratiba Sing, AnoopSingh & PiyushMalaviya	Acme Learning Pvt. Ltd. New Delhi.	1 <sup>st</sup> Edition

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**CRITERION 1 – CURRICULAR ASPECTS**

**Key Indicator – 1.3 Curriculum Enrichment**

**Metric Number: 1.3.1**

**Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum**

**DEPARTMENT OF CIVIL ENGINEERING**

**ACADEMIC YEAR 2021-22**

**EVEN SEMESTER**

SL NO.	Environment & Sustainability		Total No. of Courses
	COURSE CODE	COURSE NAME	
1	18CVL67	Environmental Engineering Laboratory	02
2	18CV642	Solid Waste Management	



<b>B. E. CIVIL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER - VI</b>			
<b>ENVIRONMENTAL ENGINEERING LABORATORY</b>			
Course Code	<b>18CVL67</b>	CIE Marks	40
Teaching Hours/Week(L:T:P)	(0:2:2)	SEE Marks	60
Credits	02	Exam Hours	03
<b>Course Learning Objectives:</b> This course will enable students,			
<ol style="list-style-type: none"> <li>1. To learn different methods of water &amp; waste water quality</li> <li>2. To conduct experiments to determine the concentrations of water and waste water</li> <li>3. To determine the degree and type of treatment</li> <li>4. To understand the environmental significance and application in environmental engineering practice</li> </ol>			
1. Preparation chemical solutions required for analysis and sampling methodologies			
2. Determination of pH, Conductivity, TDS and Turbidity.			
3. Determination of Acidity and Alkalinity			
4. Determination of Calcium, Magnesium and Total Hardness.			
5. Determination of Dissolved Oxygen			
6. Determination of BOD.			
7. Determination of Chlorides			
8. Determination of percentage of % of available chlorine in bleaching powder sample, Determination of Residual Chlorine and chlorine demand.			
9. Determination of Solids in Sewage: i) Total Solids, ii) Suspended Solids, iii) Dissolved Solids, iv) Volatile Solids, Fixed Solids v) Settleable Solids.			
10. Determination of optimum coagulant dosage using Jar test apparatus.			
11. Determination Nitrates and Iron by spectrophotometer			
12. Determination of COD(Demonstration)			
13. Air Quality Monitoring (Demonstration)			
14. Determination of Sound by Sound level meter at different locations (Demonstration)			
<b>Course Outcomes:</b> After studying this course, students will be able to:			
<ol style="list-style-type: none"> <li>1. Acquire capability to conduct experiments and estimate the concentration of different parameters.</li> <li>2. Compare the result with standards and discuss based on the purpose of analysis.</li> <li>3. Determine type of treatment, degree of treatment for water and waste water.</li> <li>4. Identify the parameter to be analyzed for the student project work in environmental stream.</li> </ol>			
<b>Question paper pattern:</b>			
<ul style="list-style-type: none"> <li>• Two experiments shall be asked from the above set of experiments.</li> <li>• One experiment to be conducted and for the other student should write detailed procedure.</li> </ul>			
<b>Reference Books:</b>			
<ol style="list-style-type: none"> <li>1. IS codes-3025 series</li> <li>2. Standard method for examination of water and waste water, APHA, 20<sup>th</sup> edition</li> <li>3. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science", McGraw-Hill Series in Civil and Environmental Engineering.</li> </ol>			

<b>B. E. CIVIL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER - VI</b>			
<b>SOLID WASTE MANAGEMENT</b>			
Course Code	<b>18CV642</b>	CIE Marks	40
Teaching Hours/Week(L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b> This course will enable students to			
<ol style="list-style-type: none"> <li>1. Study the present methods of solid waste management system and to analyze their draw backs comparing with statutory rules.</li> <li>2. Understand different elements of solid waste management from generation of solid waste to disposal.</li> <li>3. Analyze different processing technologies and to study conversion of municipal solid waste to compost or biogas.</li> <li>4. Evaluate landfill site and to study the sanitary landfill reactions.</li> </ol>			
<b>Module -1</b>			
<b>Sources:</b> Sources of Solid waste, Types of solid waste, Physical and Chemical composition of municipal solid waste. Generation rate, Numerical Problems.			
<b>Collection:</b> Collection of solid waste- services and systems, equipments, Transportation: Need of transfer operation, transfer station, transport means and methods, route optimization. Solid waste management 2000 rules with, 2016 amendments.			
<b>Module -2</b>			
Processing techniques: Purpose of processing, Volume reduction by incineration, Process description, Mechanical volume reduction (compaction), Mechanical size reduction (shredding), component separation (manual and mechanical methods).			
<b>Module -3</b>			
<b>Composting Aerobic and anaerobic method</b> - process description, process microbiology, design consideration, Mechanical composting, Vermi composting, Numerical Problems.			
<b>Sanitary land filling:</b> Definition, advantages and disadvantages, site selection, methods, reaction occurring in landfill- Gas and Leachate movement, Control of gas and leachate movement, Design of sanitary landfill. Numerical Problems.			
<b>Module -4</b>			
<b>Sources, collection, treatment and disposal:-</b> Biomedical waste,E-waste, construction and demolition waste.			
<b>Module -5</b>			
Incineration -3Ts factor affecting incineration, types of incinerations, Pyrolysis , Energy recovery technique from solid waste management. Hazardous waste.			
<b>Course outcomes:</b> After studying this course, students will be able to:			
<ol style="list-style-type: none"> <li>1. Analyse existing solid waste management system and to identify their drawbacks.</li> <li>2. Evaluate different elements of solid waste management system.</li> <li>3. Suggest suitable scientific methods for solid waste management elements.</li> <li>4. Design suitable processing system and evaluate disposal sites.</li> </ol>			
<b>Question paper pattern:</b>			
<ul style="list-style-type: none"> <li>• The question paper will have ten full questions carrying equal marks.</li> <li>• Each full question will be for 20 marks.</li> <li>• There will be two full questions (with a maximum of four sub- questions) from each module.</li> <li>• Each full question will have sub- question covering all the topics under a module.</li> <li>• The students will have to answer five full questions, selecting one full question from each module.</li> </ul>			
<b>Textbooks:</b>			

1. George Tchobanoglous, Hilary Theisen , Samuel A Vigil, “Integrated Solid Waste Management : Engineering principles and management issues”, M/c Graw hill Education . Indian edition
2. Howard S Peavy, Donald R Rowe and George Tchobanoglous, “Environmental Engineering”, Tata Mcgraw Hill Publishing Co ltd.,

**Reference Books:**

1. Municipal Solid Wastes (Management and Handling) Rules, 2000.Ministry of Environment and Forests Notification, New Delhi, the 25th September, 2000. Amendment – 1357(E) – 08-04-2016
2. Municipal Solid waste management manual, Part II published under Swachh Bharat Mission, Central Public Health and Environmental Engineering Organization (CPHEEO), 2016, Ministry of Urban Development, Government of India.
3. Handbook of Solid waste management, second edition, George Tchobanoglous, Frank Kreith, published by M/c Graw hill Education, 2002, ISBN-13 978-0071356237 ISBN -10 007135623 1

**CRITERION 1 – CURRICULAR ASPECTS**
**Key Indicator – 1.3 Curriculum Enrichment**
**Metric Number: 1.3.1**

**Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum**

**DEPARTMENT OF CIVIL ENGINEERING**
**ACADEMIC YEAR 2021-22**
**ODD SEMESTER**

SL NO.	Professional Ethics		Total No. of Courses
	COURSE CODE	COURSE NAME	
1	18CV51	Construction Management & Entrepreneurship	04
<b>Environment &amp; Sustainability</b>			
2	18CIV59	Environmental Studies	
3	18CV732	Air Pollution and Control	
4	18ME751	Energy And Environment	

<b>B. E. CIVIL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER - V</b>			
<b>CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP</b>			
Course Code	<b>18CV51</b>	CIE Marks	40
Teaching Hours/Week(L:T:P)	(2:2:0)	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b> This course will enable students to			
<ol style="list-style-type: none"> <li>Understand the concept of planning, scheduling, cost and quality control, safety during construction, organization and use of project information necessary for construction project.</li> <li>Inculcate Human values to grow as responsible human beings with proper personality.</li> <li>Keep up ethical conduct and discharge professional duties.</li> </ol>			
<b>Module -1</b>			
<b>Management:</b> Characteristics of management, functions of management, importance and purpose of planning process, types of plans.			
<b>Construction Project Formulation:</b> Introduction to construction management, project organization, management functions, management styles.			
<b>Construction Planning and Scheduling:</b> Introduction, types of project plans, work breakdown structure, Grant Chart, preparation of network diagram- event and activity based and its critical path-critical path method, PERT method, concept of activity on arrow and activity on node.			
<b>Module -2</b>			
<b>Resource Management:</b> Basic concepts of resource management, class of labour, Wages & statutory requirement, Labour Production rate or Productivity, Factors affecting labour output or productivity.			
<b>Construction Equipments:</b> classification of construction equipment, estimation of productivity for: excavator, dozer, compactors, graders and dumpers. Estimation of ownership cost, operational and maintenance cost of construction equipments. Selection of construction equipment and basic concept on equipment maintenance			
<b>Materials:</b> material management functions, inventory management.			
<b>Module -3</b>			
<b>Construction Quality , safety and Human Values:</b>			
Construction quality process, inspection, quality control and quality assurance, cost of quality, ISO standards. Introduction to concept of Total Quality Management			
<b>HSE: Introduction</b> to concepts of HSE as applicable to Construction. Importance of safety in construction , Safety measures to be taken during Excavation , Explosives , drilling and blasting , hot bituminous works , scaffolds / platforms / ladder , form work and equipment operation. Storage of materials. Safety through legislation, safety campaign. Insurances.			
<b>Ethics :</b> Morals, values and ethics, integrity, trustworthiness , work ethics, need of engineering ethics, Professional Duties, Professional and Individual Rights, Confidential and Proprietary Information, Conflict of Interest Confidentiality, Gifts and Bribes, Price Fixing, Whistle Blowing.			
<b>Module -4</b>			
<b>Introduction to engineering economy:</b> Principles of engineering economics, concept on Micro and macro analysis, problem solving and decision making.			
<b>Interest and time value of money:</b> concept of simple and compound interest, interest formula for: single payment, equal payment and uniform gradient series. Nominal and effective interest rates, deferred annuities, capitalized cost.			
<b>Comparison of alternatives:</b> Present worth, annual equivalent, capitalized and rate of return methods, Minimum Cost analysis and break even analysis.			
<b>Module -5</b>			

**Entrepreneurship:** Evolution of the concept, functions of an entrepreneur, concepts of entrepreneurship, stages in entrepreneurial process, different sources of finance for entrepreneur, central and state level financial institutions.

Micro, Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME, Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC.

**Business Planning Process:** Business planning process, marketing plan, financial plan, project report and feasibility study, guidelines for preparation of model project report for starting a new venture. Introduction to international entrepreneurship opportunities, entry into international business, exporting, direct foreign investment, venture capital.

**Course Outcomes:** After studying this course, students will be able to:

1. Prepare a project plan based on requirements and prepare schedule of a project by understanding the activities and their sequence.
2. Understand labour output, equipment efficiency to allocate resources required for an activity / project to achieve desired quality and safety.
3. Analyze the economics of alternatives and evaluate benefits and profits of a construction activity based on monetary value and time value.
4. Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.

**Question paper pattern:**

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

**Textbooks:**

1. P C Tripathi and P N Reddy, "Principles of Management", Tata McGraw-Hill Education
2. Chitkara, K.K, "Construction Project Management: Planning Scheduling and Control", Tata McGraw-Hill Publishing Company, New Delhi.
3. Poornima M. Charantimath , "Entrepreneurship Development and Small Business Enterprise", Dorling Kindersley (India) Pvt. Ltd., Licensees of Pearson Education
4. Dr. U.K. Shrivastava "Construction Planning and Management", Galgotia publications Pvt. Ltd. New Delhi.
5. Bureau of Indian standards – IS 7272 (Part-1)- 1974 : Recommendations for labour output constant for building works:

**Reference Books:**

1. Robert L Peurifoy, Clifford J. Schexnayder, Aviad Shapira, Robert Schmitt, "Construction Planning, Equipment, and Methods (Civil Engineering), McGraw-Hill Education
2. Harold Koontz, Heinz Weihrich, "Essentials of Management: An International, Innovation, and Leadership perspective", T.M.H. Edition, New Delhi
3. Frank Harris, Ronald McCaffer with Francis Edum-Fotwe, " Modern Construction Management", Wiley-Blackwell
4. Mike Martin, Roland Schinzinger, "Ethics in Engineering", McGraw-Hill Education
5. Chris Hendrickson and Tung Au, "Project Management for Construction - Fundamentals Concepts for Owners, Engineers, Architects and Builders", Prentice Hall, Pittsburgh
6. James L. Riggs, David D. Bedworth , Sabah U. Randhawa " Engineering Economics" 4

<p align="center"><b>B.E IN CIVIL ENGINEERING(CV-2018-19)</b>  <b>Outcome Based Education (OBE) and Choice Based Credit System (CBCS)</b>  <b>SEMESTER – V</b></p>				
<p align="center"><b>ENVIRONMENTAL STUDIES</b></p>				
Course Code	<b>18CIV59</b>	CIE Marks	40	
Teaching Hours / Week (L:T:P)	(1:0:0)	SEE Marks	60	
Credits	01	Exam Hours	02	
<b>Module - 1</b>				
<p><b>Ecosystems</b> (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake.  <b>Biodiversity:</b> Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.</p>				
<b>Module - 2</b>				
<p><b>Advances in Energy Systems</b> (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.  <b>Natural Resource Management</b> (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.</p>				
<b>Module - 3</b>				
<p><b>Environmental Pollution</b> (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.  <b>Waste Management &amp; Public Health Aspects:</b> Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.</p>				
<b>Module - 4</b>				
<p><b>Global Environmental Concerns</b> (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.</p>				
<b>Module - 5</b>				
<p><b>Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications):</b> G.I.S. &amp; Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs.  <b>Field work:</b> Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.</p>				
<p><b>Course outcomes:</b> At the end of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,</li> <li>• CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.</li> <li>• CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.</li> <li>• CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.</li> </ul>				
<p><b>Question paper pattern:</b></p> <ul style="list-style-type: none"> <li>• The Question paper will have 100 objective questions.</li> <li>• Each question will be for 01 marks</li> <li>• Student will have to answer all the questions in an OMR Sheet.</li> <li>• The Duration of Exam will be 2 hours.</li> </ul>				
Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Environmental Studies	Benny Joseph	Tata Mc Graw – Hill.	2 <sup>nd</sup> Edition, 2012

2.	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3 <sup>rd</sup> Edition: 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
<b>Reference Books</b>				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2 <sup>nd</sup> Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11 <sup>th</sup> Edition, 2006
3	Text Book of Environmental and Ecology	Pratiba Sing, AnoopSingh& PiyushMalaviya	Acme Learning Pvt. Ltd. New Delhi.	1 <sup>st</sup> Edition



<b>B. E. CIVIL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER - VII</b>			
<b>AIR POLLUTION AND CONTROL</b>			
Course Code	<b>18CV732</b>	CIE Marks	40
Teaching Hours/Week(L:T:P)	(3:0:0)	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b> This course will enable students to			
<ol style="list-style-type: none"> <li>1. Study the sources and effects of air pollution</li> <li>2. Learn the meteorological factors influencing air pollution.</li> <li>3. Analyze air pollutant dispersion models</li> <li>4. Illustrate particular and gaseous pollution control methods.</li> </ol>			
<b>Module-1</b>			
<b>Introduction:</b> Definition, Sources, classification and characterization of air pollutants. Effects of air pollution on health, vegetation & materials. Types of inversion, photochemical smog.			
<b>Module-2</b>			
<b>Meteorology:</b> Temperature lapse rate & stability, wind velocity & turbulence, plume behavior, measurement of meteorological variables, wind rose diagrams, Plume Rise, estimation of effective stack height and mixing depths.			
<b>Module-3</b>			
<b>Sampling:</b> Sampling of particulate and gaseous pollutants (Stack, Ambient & indoor air pollution), Monitoring and analysis of air pollutants (PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>x</sub> , NO <sub>x</sub> , CO, NH <sub>3</sub> ). Development of air quality models-Gaussian dispersion model-Including Numerical problems.			
<b>Module-4</b>			
<b>Control Techniques:</b> Particulate matter and gaseous pollutants- settling chambers, cyclone separators, scrubbers, filters & ESP - Including Numerical problems. Site selection for industrial plant location.			
<b>Module-5</b>			
Air pollution due to automobiles, standards and control methods. Noise pollution- causes, effects and control, noise standards. Environmental issues, global episodes. Environmental laws and acts.			
<b>Course outcomes:</b> After studying this course, students will be able to:			
<ol style="list-style-type: none"> <li>1. Identify the major sources of air pollution and understand their effects on health and environment.</li> <li>2. Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models.</li> <li>3. Ascertain and evaluate sampling techniques for atmospheric and stack pollutants.</li> <li>4. Choose and design control techniques for particulate and gaseous emissions.</li> </ol>			
<b>Question paper pattern:</b>			
<ul style="list-style-type: none"> <li>• The question paper will have ten full questions carrying equal marks.</li> <li>• Each full question will be for 20 marks.</li> <li>• There will be two full questions (with a maximum of four sub- questions) from each module.</li> <li>• Each full question will have sub- question covering all the topics under a module.</li> <li>• The students will have to answer five full questions, selecting one full question from each module.</li> </ul>			
<b>Textbooks:</b>			
<ol style="list-style-type: none"> <li>1. M. N. Rao and H V N Rao, "Air pollution", Tata Mc-G raw Hill Publication.</li> <li>2. H. C. Perkins, "Air pollution". Tata McGraw Hill Publication.</li> <li>3. Mackenzie Davis and David Cornwell, "Introduction t o Environmental Engineering" McGraw-Hill Co.</li> </ol>			
<b>Reference Books:</b>			
<ol style="list-style-type: none"> <li>1. Noel De Nevers, "Air Pollution Control Engineering", Waveland Pr Inc.</li> <li>2. Anjaneyulu Y, "Text book of Air Pollution and Control Technologies", Allied Publishers.</li> </ol>			

<b>B. E. MECHANICAL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
Open Elective-B (Semester VII)			
<b>ENERGY AND ENVIRONMENT</b>			
Course Code	<b>18ME751</b>	CIE Marks	40
Teaching Hours / Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b>			
<ul style="list-style-type: none"> <li>• To understand the fundamentals of energy sources, energy use, energy efficiency, and resulting environmental implications of various energy supplies.</li> <li>• To introduce various aspects of environmental pollution and its control.</li> <li>• To understand the causes and remedies related to social issues like global warming, ozone layer depletion, climate change etc.</li> <li>• To introduce various acts related to prevention and control of pollution of water and air, forest protection act, wild life protection act etc.</li> </ul>			
<b>Module-1</b>			
Basic Introduction to Energy: Energy and power, forms of energy, primary energy sources, energy flows, world energy production and consumption, Key energy trends in India: Demand, Electricity, Access to modern energy, Energy production and trade, Factors affecting India's energy development: Economy and demographics Policy and institutional framework, Energy prices and affordability, Social and environmental aspects, Investment.			
<b>Module-2</b>			
Energy storage systems: Thermal energy storage methods, Energy saving, Thermal energy storage systems Energy Management: Principles of Energy Management, Energy demand estimation, Energy pricing Energy Audit: Purpose, Methodology with respect to process Industries, Characteristic method employed in <i>Certain Energy Intensive Industries</i>			
<b>Module-3</b>			
Environment: Introduction, Multidisciplinary nature of environmental studies- Definition, scope and importance, Need for public awareness. Ecosystem: Concept, Energy flow, Structure and function of an ecosystem. Food chains, food webs and ecological pyramids, Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystems, Ecological succession.			
<b>Module-4</b>			
Environmental Pollution: Definition, Cause, effects and control measures of - Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution and Nuclear hazards, Solid waste Management, Disaster management Role of an individual in prevention of pollution, Pollution case studies.			
<b>Module-5</b>			
Social Issues and the Environment: Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. Wasteland reclamation, Consumerism and waste products, Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation.			
<b>Group assignments:</b>			
Assignments related to e-waste management; Municipal solid waste management; Air pollution control systems; Water treatment systems; Wastewater treatment plants; Solar heating systems; Solar power plants; Thermal power plants; Hydroelectric power plants; Biofuels; Environmental status assessments; Energy status assessments etc.			
<b>Course Outcomes:</b> At the end of the course, the student will be able to:			

- CO1: Understand energy scenario, energy sources and their utilization.  
 CO2: Understand various methods of energy storage, energy management and economic analysis.  
 CO3: Analyse the awareness about environment and eco system.  
 CO4: Understand the environment pollution along with social issues and acts.

**Question paper pattern:**

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Textbook for Environmental Studies for Undergraduate Courses of all Branches of Higher Education		University grant commission and Bharathi Vidyapeeth Institute of environment education and Research, Pune	
2	Energy Management Audit & Conservation- for Module 2	Barun Kumar De	Vrinda Publication	2nd Edition 2010
<b>Reference Books</b>				
1	Energy Management Hand book	Turner, W. C., Doty, S. and Truner, W. C	Fairmont Press	7 <sup>th</sup> Edition 2009
2	Energy Management	Murphy, W. R	Elsevier	2007
3	Energy Management Principles	Smith, C. B	Pergamum	2007
4	Environment pollution control Engineering	C S Rao	New Age International	reprint 2015, 2nd edition
5	Environmental studies	Benny Joseph	Tata McGraw Hill	2nd edition 2008



## CRITERION 1 – CURRICULAR ASPECTS

### Key Indicator- 1.3 Curriculum Enrichment

#### Metric Number: 1.3.1

**Institution integrates crosscutting issues relevant to professional Ethics, Gender Human Values, Environment and Sustainability in transacting the curriculum**

**Department of Mechanical Engineering**

**Academic Year 21-22**

Sl. No.	Professional Ethics		Total No. of Courses
	Course Code	Course Name	
1.	18CPC49	Constitution of India, Professional Ethics and Cyber Law	02
	<b>Environment &amp; Sustainability</b>		
3.	18CIV59	Environmental Studies	

**B. E. Common to all Programmes  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
SEMESTER - III**

**CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (CPC)**

Course Code	<b>18CPC39/49</b>	CIE Marks	40
Teaching Hours/Week (L:T:P)	(1:0:0)	SEE Marks	60
Credits	01	Exam Hours	02

**Course Learning Objectives: To**

- know the fundamental political codes, structure, procedures, powers, and duties of Indian government institutions, fundamental rights, directive principles, and the duties of citizens
- Understand engineering ethics and their responsibilities; identify their individual roles and ethical responsibilities towards society.
- Know about the cybercrimes and cyber laws for cyber safety measures.

**Module-1**

**Introduction to Indian Constitution:**

The Necessity of the Constitution, The Societies before and after the Constitution adoption. Introduction to the Indian constitution, The Making of the Constitution, The Role of the Constituent Assembly - Preamble and Salient features of the Constitution of India. Fundamental Rights and its Restriction and limitations in different Complex Situations. Directive Principles of State Policy (DPSP) and its present relevance in our society with examples. Fundamental Duties and its Scope and significance in Nation building.

**Module-2**

**Union Executive and State Executive:**

Parliamentary System, Federal System, Centre-State Relations. Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism. State Executives – Governor, Chief Minister, State Cabinet, State Legislature, High Court and Subordinate Courts, Special Provisions (Articles 370,371,371J) for some States.

**Module-3**

**Elections, Amendments and Emergency Provisions:**

Elections, Electoral Process, and Election Commission of India, Election Laws. Amendments - Methods in Constitutional Amendments (How and Why) and Important Constitutional Amendments. Amendments – 7,9,10,12,42,44, 61, 73,74, ,75, 86, and 91,94,95,100,101,118 and some important Case Studies. Emergency Provisions, types of Emergencies and its consequences.

**Constitutional special provisions:**

Special Provisions for SC and ST, OBC, Women, Children and Backward Classes.

**Module-4**

**Professional / Engineering Ethics:**

Scope & Aims of Engineering & Professional Ethics - Business Ethics, Corporate Ethics, Personal Ethics. Engineering and Professionalism, Positive and Negative Faces of Engineering Ethics, Code of Ethics as defined in the website of Institution of Engineers (India): Profession, Professionalism, and Professional Responsibility. Clash of Ethics, Conflicts of Interest. Responsibilities in Engineering Responsibilities in Engineering and Engineering Standards, the impediments to Responsibility. Trust and Reliability in Engineering, IPRs (Intellectual Property Rights), Risks, Safety and liability in Engineering

**Module-5**

**Internet Laws, Cyber Crimes and Cyber Laws:**

Internet and Need for Cyber Laws, Modes of Regulation of Internet, Types of cyber terror capability, Net neutrality, Types of Cyber Crimes, India and cyber law, Cyber Crimes and the information Technology Act 2000, Internet Censorship. Cybercrimes and enforcement agencies.

**Course Outcomes:** On completion of this course, students will be able to,  
 CO 1: Have constitutional knowledge and legal literacy.  
 CO 2: Understand Engineering and Professional ethics and responsibilities of Engineers.  
 CO 3: Understand the the cybercrimes and cyber laws for cyber safety measures.

**Question paper pattern for SEE and CIE:**

- The SEE question paper will be set for 100 marks and the marks scored by the students will proportionately be reduced to 60. The pattern of the question paper will be objective type (MCQ).
- For the award of 40 CIE marks, refer the University regulations 2018.

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<b>Textbook/s</b>				
1	Constitution of India, Professional Ethics and Human Rights	Shubham Singles, Charles E. Haries, and et al	Cengage Learning India	2018
2	Cyber Security and Cyber Laws	Alfred Basta and et al	Cengage Learning India	2018
<b>Reference Books</b>				
3	Introduction to the Constitution of India	Durga Das Basu	Prentice –Hall,	2008.
4	Engineering Ethics	M. Govindarajan, S. Natarajan, V. S. Senthilkumar	Prentice –Hall,	2004

<b>ENVIRONMENTAL STUDIES</b>				
Course Code	<b>18CIV59</b>	CIE Marks	40	
Teaching Hours / Week (L:T:P)	(1:0:0)	SEE Marks	60	
Credits	01	Exam Hours	02	
<b>Module - 1</b>				
<p><b>Ecosystems</b> (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake.  <b>Biodiversity:</b> Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.</p>				
<b>Module - 2</b>				
<p><b>Advances in Energy Systems</b> (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.  <b>Natural Resource Management</b> (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.</p>				
<b>Module - 3</b>				
<p><b>Environmental Pollution</b> (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.  <b>Waste Management &amp; Public Health Aspects:</b> Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.</p>				
<b>Module - 4</b>				
<p><b>Global Environmental Concerns</b> (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.</p>				
<b>Module - 5</b>				
<p><b>Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications):</b> G.I.S. &amp; Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs.  <b>Field work:</b> Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.</p>				
<p><b>Course outcomes:</b> At the end of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,</li> <li>• CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.</li> <li>• CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.</li> <li>• CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.</li> </ul>				
<p><b>Question paper pattern:</b></p> <ul style="list-style-type: none"> <li>• The Question paper will have 100 objective questions.</li> <li>• Each question will be for 01 marks</li> <li>• Student will have to answer all the questions in an OMR Sheet.</li> <li>• The Duration of Exam will be 2 hours.</li> </ul>				
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<b>Textbook/s</b>				
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2.	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3 <sup>rd</sup> Edition 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
<b>Reference Books</b>				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2 <sup>nd</sup> Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11 <sup>th</sup> Edition, 2006