

## **CRITERION 1: CURRICULAR ASPECTS**

### **Key Indicator- 1.3 Curriculum Enrichment**

**Metric 1.3.1:** Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum

### **ACADEMIC YEAR 2019-20 Department of Computer Science and Engineering**

#### **PROFESSIONAL ETHICS**

<b>SL NO.</b>	<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>SEM</b>	<b>Total No of Courses</b>
1	18CPC49	Constitution of India, Professional Ethics and Cyber Law	4	2
2	17CS51	Management, Entrepreneurship for IT Industry	5	

**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

**MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY**

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2017-2018)

**SEMESTER – V**

Subject Code	17CS51	IA Marks	40
Number of Lecture Hours/Week	4	Exam Marks	60
Total Number of Lecture Hours	50	Exam Hours	03
<b>CREDITS – 04</b>			
<b>Module – 1</b>			<b>Teaching Hours</b>
<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>
<b>Module – 2</b>			
<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>
<b>Module – 3</b>			
<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>
<b>Module – 4</b>			
<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>
<b>Module – 5</b>			
<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 their importance in entrepreneurship</li><li>• Utilize the resources available effectively through ERP</li><li>• Make use of IPRs and institutional support in entrepreneurship</li></ul>			
<b>Question paper pattern:</b>			

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



## 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 and Communication Engineering**

**Academic Year 2019-20**

Sl. No.	Professional Ethics		Total No. of Courses
	Course Code	Course Name	
1.	18CPC39/49	Constitution of India Professional Ethics and Cyber law(CPC)	03
2.	18ES51	Technological innovation management and entrepreneurship	
<b>Environment &amp; Sustainability</b>			
3.	18CIV59	Environmental Studies	



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

Course Code	: 18CPC39/49	CIE Marks : 40
Lecture 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,

1. Describe and analyze the role and salient features of the Indian Constitution
2. Understand the structure and powers of the Union and State Executives.
3. Relate to the procedures and provisions in the electoral process.
4. Develop Engineering and Professional ethics and adopt the responsibilities expected of an Engineer.
5. Identify the cybercrimes and describe the 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.

**Textbook/s**

1. Constitution of India, Professional Ethics and Human Rights, Shubham Singles, Charles E. Haries, and et al, Cengage Learning India, 2018





### 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\*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.



<b>BE 2018 Scheme Fifth Semester Syllabus EC / TC</b>			
<b>B. E. (EC / TC)</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER – V</b>			
<b>TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP</b>			
<b>Course Code</b>	<b>18ES51</b>	<b>CIE Marks</b>	<b>40</b>
<b>Number of Lecture Hours/Week</b>	<b>03</b>	<b>SEE Marks</b>	<b>60</b>
<b>Total Number of Lecture Hours</b>	<b>40 (08 Hours / Module)</b>	<b>Exam Hours</b>	<b>03</b>
<b>CREDITS – 03</b>			
<p><b>Course Learning Objectives:</b> This course will enable students to:</p> <ul style="list-style-type: none"> <li>• Understand basic skills of Management</li> <li>• Understand the need for Entrepreneurs and their skills</li> <li>• Identify the Management functions and Social responsibilities</li> <li>• Understand the Ideation Process, creation of Business Model, Feasibility Study and sources of funding</li> </ul>			
<b>Module-1</b>			<b>RBT Level</b>
<p><b>Management:</b> Nature and Functions of Management – Importance, Definition, Management Functions, Levels of Management, Roles of Manager, Managerial Skills, Management &amp; Administration, Management as a Science, Art &amp; Profession (<b>Selected topics of Chapter 1, Text 1</b>).</p> <p><b>Planning:</b> Planning-Nature, Importance, Types, Steps and Limitations of Planning; Decision Making – Meaning, Types and Steps in Decision Making(<b>Selected topics from Chapters 4 &amp; 5, Text 1</b>).</p>			<b>L1,L2</b>
<b>Module-2</b>			
<p><b>Organizing and Staffing:</b> <b>Organization</b>-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; <b>Staffing</b>-Need and Importance, Recruitment and Selection Process (<b>Selected topics from Chapters 7, 8 &amp; 11,Text 1</b>).</p> <p><b>Directing and Controlling:</b> 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 (<b>Selected topics from Chapters 15 to 18 and 9, Text 1</b>).</p>			<b>L1,L2</b>
<b>Module-3</b>			
<p><b>Social Responsibilities of Business:</b> Meaning of Social Responsibility, Social Responsibilities of Business towards Different Groups, Social Audit, Business Ethics and Corporate Governance (<b>Selected topics from Chapter 3, Text 1</b>).</p> <p><b>Entrepreneurship:</b> 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 (<b>Selected topics from Chapter 2, Text 2</b>).</p>			<b>L1,L2</b>
<b>Module-4</b>			





<p><b>Family Business:</b> 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 (<b>Selected topics from Chapter 4,(Page 71-75) Text 2</b>).</p> <p><b>Idea Generation and Feasibility Analysis-</b> 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.(<b>Selected topics from Chapter 6(Page No. 111-117) &amp; Chapter 7(Page No. 140-142), Text 2</b>)</p>	<p><b>L1,L2</b></p>
<p><b>Module-5</b></p>	
<p><b>Business model</b> – 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? (<b>Selected topics from Chapter 8 (Page No 159-164, Text 2)</b>)</p> <p><b>Financing and How to start a Business?</b> 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(<b>Selected topics from Chapter 7(Page No 147-149), Chapter 5(Page No 93-99) &amp; Chapter 8(Page No. 166-172) Text 2</b>)</p> <p><b>Project Design and Network Analysis:</b> 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.(<b>Selected topics from Chapters 20, Text 3</b>).</p>	<p><b>L1,L2,L3</b></p>
<p><b>Course Outcomes:</b> After studying this course, students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the fundamental concepts of Management and Entrepreneurship and opportunities in order to setup a business</li> <li>• Describe the functions of Managers, Entrepreneurs and their social responsibilities</li> <li>• Understand the components in developing a business plan</li> <li>• Awareness about various sources of funding and institutions supporting entrepreneurs</li> </ul>	
<p><b>Text Books:</b></p> <ol style="list-style-type: none"> <li>1. Principles of Management – P.C Tripathi, P.N Reddy, McGraw Hill Education, 6<sup>th</sup> Edition, 2017. ISBN-13:978-93-5260-535-4.</li> <li>2. Entrepreneurship Development Small Business Enterprises- Poornima M Charantimath, Pearson Education 2008, ISBN 978-81-7758-260-4.</li> <li>3. Dynamics of Entrepreneurial Development and Management by Vasant Desai. HPH 2007, ISBN: 978-81-8488-801-2.</li> <li>4. Robert D. Hisrich, Mathew J. Manimala, Michael P Peters and Dean A. Shepherd, "Entrepreneurship", 8th Edition, Tata Mc-graw Hill Publishing Co.ltd.-new Delhi, 2012</li> </ol>	
<p><b>Reference Book:</b></p> <ol style="list-style-type: none"> <li>1. Essentials of Management: An International, Innovation and Leadership perspective by Harold Koontz, Heinz Wehrich McGraw Hill Education, 10<sup>th</sup> Edition 2016. ISBN- 978-93-392-2286-4.</li> </ol>	



## ENVIRONMENTAL STUDIES

Course Code	: 18CIV59	CIE Marks	: 40
Lecture 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:

1. Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
2. Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
3. Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
4. Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
5. Relate to the latest Developments in Environmental Pollution Mitigation Tools.

**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.

**Textbook/s**

1. Environmental Studies, Benny Joseph, Tata McGraw – 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. Principles 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, Anoop Singh & Piyush Malaviya, Acme Learning Pvt. Ltd. New Delhi, 1<sup>st</sup> Edition

**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 2019-20**

**ODD SEMESTER**

SL NO.	Professional Ethics		Total No. of Courses
	COURSE CODE	COURSE NAME	
1	18CPC49	Constitution of India, Professional Ethics and Cyber Law	03
<b>Environment &amp; Sustainability</b>			
2	17CV551	Air pollution and Control	
3	15CVL76	Environmental Engineering Laboratory	



<b>B. E. AUTOMOBILE ENGINEERING</b>				
<b>Outcome Based Education (OBE) and Choice Based Credit System (CBCS)</b>				
<b>SEMESTER - III</b>				
<b>CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (CPC)</b>				
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	
<b>Course Learning Objectives: To</b>				
<ul style="list-style-type: none"> <li>know the fundamental political codes, structure, procedures, powers, and duties of Indian government institutions, fundamental rights, directive principles, and the duties of citizens</li> <li>Understand engineering ethics and their responsibilities; identify their individual roles and ethical responsibilities towards society.</li> <li>Know about the cybercrimes and cyber laws for cyber safety measures.</li> </ul>				
<b>Module-1</b>				
<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 - 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.				
<b>Module-2</b>				
<b>Union Executive and State Executive:</b> 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.				
<b>Module-3</b>				
<b>Elections, Amendments and Emergency Provisions:</b> 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.				
<b>Constitutional special provisions:</b> Special Provisions for SC and ST, OBC, Women, Children and Backward Classes.				
<b>Module-4</b>				
<b>Professional / Engineering Ethics:</b> 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				
<b>Module-5</b>				
<b>Internet Laws, Cyber Crimes and Cyber Laws:</b> 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.				
<b>Course Outcomes:</b> On completion of this course, students will be able to,				
<ul style="list-style-type: none"> <li>CO1: Have constitutional knowledge and legal literacy.</li> <li>CO2: Understand Engineering and Professional ethics and responsibilities of Engineers.</li> <li>CO3: Understand the the cybercrimes and cyber laws for cyber safety measures.</li> </ul>				
<b>Question paper pattern for SEE and CIE:</b>				
<ul style="list-style-type: none"> <li>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).</li> <li>For the award of 40 CIE marks, refer the University regulations 2018.</li> </ul>				
<b>Sl. No.</b>	<b>Title of the Book</b>	<b>Name of the Author/s</b>	<b>Name of the Publisher</b>	<b>Edition and Year</b>

<b>Textbooks</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>TITLE OF THE COURSE: AIR POLLUTION AND CONTROL</b> <b>B.E., V Semester, Civil Engineering</b> <b>[As per Choice Based Credit System (CBCS) scheme]</b>			
<b>Course Code</b>	<b>17CV551</b>	<b>CIE Marks</b>	<b>40</b>
<b>Number of Lecture Hours/Week</b>	<b>03</b>	<b>SEE Marks</b>	<b>60</b>
<b>Total Number of Lecture Hours</b>	<b>40 (8 Hours per Module)</b>	<b>Exam Hours</b>	<b>03</b>
<b>Credits – 03</b>			
<b>Course 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>L1,L2</b>			
<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. Development of air quality models-Gaussian dispersion model			
<b>L1,L2,L3</b>			
<b>Module-3</b>			
<b>Sampling:</b> Sampling of particulate and gaseous pollutants (Stack, Ambient & indoor air pollution), Monitoring and analysis of air pollutants (PM2.5, PM10, SOX, NOX, CO, NH3)			
<b>L2,L3,L4</b>			
<b>Module-4</b>			
<b>Control Techniques:</b> Particulate matter and gaseous pollutants- settling chambers, cyclone separators, scrubbers, filters & ESP.			
<b>L3,L4</b>			
<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, laws, acts, protocols			
<b>L3,L4,L5,L6</b>			
<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>Text Books:</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>			

**Reference Books:**

1. Noel De Nevers, "Air Pollution Control Engineering" , Waveland Pr Inc.
2. Anjaneyulu Y, "Text book of Air Pollution and Contr ol Technologies", Allied Publishers

<b>Course Title: Environmental Engineering Laboratory</b> As per Choice Based Credit System (CBCS) scheme SEMESTER:VII			
Subject Code	15CVL76	IA Marks	20
Number of Lecture Hours/Week	11+2P	Exam Marks	80
Total Number of Lecture Hours	40	Exam Hours	03
<b>CREDITS –02</b>		<b>Total Marks- 100</b>	
<b>Course objectives:</b> This course will enable students, <ol style="list-style-type: none"> <li>To learn different methods of water &amp; waste water quality</li> <li>To conduct experiments to determine the concentrations of water and waste water</li> <li>To determine the degree and type of treatment</li> <li>To understand the environmental significance and application in environmental engineering practice</li> </ol>			
Experiments	Teaching Hours	Revised Bloom's Taxonomy (RBT) Level	
1. Determination of pH, Acidity and Alkalinity	02 Class	L1,L2,L3	
2. Determination of Calcium, Magnesium and Total Hardness.	02 Class	L1,L2,L3	
3. Determination of Dissolved Oxygen. 4. Determination of BOD.	02 Class	L1,L2,L3	
5. Determination of Chlorides	01 Class	L1,L2,L3	
6. Determination of percentage of available chlorine in bleaching powder, Determination of Residual Chlorine	01 Class	L1,L2,L3	
7. Determination of Solids in Sewage: I) Total Solids, II) Suspended Solids, III) Dissolved Solids, IV) Volatile Solids, Fixed Solids, V) Settle able Solids. 8. Determination of Turbidity by Nephelometer 9. Determination of Optimum Dosage of Alum using Jar test apparatus.	02 Class	L1,L2,L3	
10. Determination of sodium and potassium using flame photometer.	01 Class	L1,L2,L3	
11. Determination Nitrates by spectrophotometer. 12. Determination of Iron & Manganese.	01 Class	L1,L2,L3	
13. Determination of COD.	Demonstration	L1,L2,L3	
14. Air Quality Monitoring (Ambient, stack monitoring , Indoor air pollution)	Demonstration	L1,L2,L3	
15. Determination of Sound by Sound level meter at different location	Demonstration	L1,L2,L3	
<b>Course Outcomes:</b> After studying this course, students will be able to: <ol style="list-style-type: none"> <li>Acquire capability to conduct experiments and estimate the concentration of different parameters.</li> <li>Compare the result with standards and discuss based on the purpose of analysis.</li> <li>Determine type of treatment, degree of treatment for water and waste water.</li> <li>Identify the parameter to be analyzed for the student project work in environmental stream.</li> </ol>			
<b>Program Objectives:</b> <ol style="list-style-type: none"> <li>Evaluation of the test results and assesses the impact on water and waste water treatment.</li> <li>Train student to undertake student project work in 8<sup>th</sup> semester in the field of environmental engineering.</li> </ol>			
<b>Question paper pattern:</b> Two experiments shall be asked from the above set One experiment to be conducted and for the other student should write detailed procedure.			
<b>Reference Books:</b> <ol style="list-style-type: none"> <li>Lab Manual, ISO 14001 Environmental Management, Regulatory Standards for Drinking Water and Sewage disposal</li> <li>Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science" , McGraw-Hill Series in Civil and Environmental Engineering</li> </ol>			

**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 2019-20**
**EVEN SEMESTER**

SL NO.	Professional Ethics		Total No. of Courses
	COURSE CODE	COURSE NAME	
1	18CPC49	Constitution of India, Professional Ethics and Cyber Law	03
2	17CV61	Construction Management and Entrepreneurship	
<b>Environment &amp; Sustainability</b>			
3	17CV661	Water Resource Management	



<b>B. E. AUTOMOBILE ENGINEERING</b>				
<b>Outcome Based Education (OBE) and Choice Based Credit System (CBCS)</b>				
<b>SEMESTER - III</b>				
<b>CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (CPC)</b>				
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	
<b>Course Learning Objectives:</b> To				
<ul style="list-style-type: none"> <li>• know the fundamental political codes, structure, procedures, powers, and duties of Indian government institutions, fundamental rights, directive principles, and the duties of citizens</li> <li>• Understand engineering ethics and their responsibilities; identify their individual roles and ethical responsibilities towards society.</li> <li>• Know about the cybercrimes and cyber laws for cyber safety measures.</li> </ul>				
<b>Module-1</b>				
<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 - 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.				
<b>Module-2</b>				
<b>Union Executive and State Executive:</b> 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.				
<b>Module-3</b>				
<b>Elections, Amendments and Emergency Provisions:</b> 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.				
<b>Constitutional special provisions:</b> Special Provisions for SC and ST, OBC, Women, Children and Backward Classes.				
<b>Module-4</b>				
<b>Professional / Engineering Ethics:</b> 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				
<b>Module-5</b>				
<b>Internet Laws, Cyber Crimes and Cyber Laws:</b> 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.				
<b>Course Outcomes:</b> On completion of this course, students will be able to,				
<ul style="list-style-type: none"> <li>• CO1: Have constitutional knowledge and legal literacy.</li> <li>• CO2: Understand Engineering and Professional ethics and responsibilities of Engineers.</li> <li>• CO3: Understand the the cybercrimes and cyber laws for cyber safety measures.</li> </ul>				
<b>Question paper pattern for SEE and CIE:</b>				
<ul style="list-style-type: none"> <li>• 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).</li> <li>• For the award of 40 CIE marks, refer the University regulations 2018.</li> </ul>				
<b>Sl. No.</b>	<b>Title of the Book</b>	<b>Name of the Author/s</b>	<b>Name of the Publisher</b>	<b>Edition and Year</b>

<b>Textbooks</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>Course Title: CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP</b> <b>As per Choice Based Credit System (CBCS) scheme]</b> <b>SEMESTER:VI</b>			
<b>Subject Code</b>	<b>17CV61</b>	<b>IA Marks</b>	<b>40</b>
<b>Number of Lecture Hours/Week</b>	<b>04</b>	<b>Exam Marks</b>	<b>60</b>
<b>Total Number of Lecture Hours</b>	<b>50</b>	<b>Exam Hours</b>	<b>03</b>
<b>CREDITS -04</b>		<b>Total Marks - 100</b>	
<p><b>Course Objectives:</b> This course will enable students to</p> <ol style="list-style-type: none"> <li>1. 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>2. Inculcate Human values to grow as responsible human beings with proper personality.</li> <li>3. Keep up ethical conduct and discharge professional duties.</li> </ol>			
<b>Module -1</b>			
<p><b>Management:</b> Characteristics of management, functions of management, importance and purpose of planning process, types of plans</p> <p><b>Construction Project Formulation:</b> Introduction to construction management, project organization, management functions, management styles</p> <p><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, concept of activity on arrow and activity on node.</p>			
<b>L1,L2,L3</b>			
<b>Module -2</b>			
<p><b>Resource Management:</b> Basic concepts of resource management, class of labour, Wages &amp; statutory requirement, Labour Production rate or Productivity, Factors affecting labour output or productivity.</p> <p><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</p> <p><b>Materials:</b> material management functions, inventory management.</p>			
<b>L1,L2,L3</b>			
<b>Module -3</b>			
<p><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</p> <p><b>HSE:</b> Introduction 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.</p> <p><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.</p>			
<b>L1,L2,L3</b>			
<b>Module -4</b>			
<p><b>Introduction to engineering economy :</b> Principles of engineering economics, concept on Micro and macro analysis, problem solving and decision making.</p> <p><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.</p>			

<p><b>Comparison of alternatives :</b> Present worth, annual equivalent , capitalized and rate of return methods , Minimum Cost analysis and break even analysis</p> <p style="text-align: right;"><b>L1,L2,L3</b></p>
<p><b>Module -5</b></p> <p><b>Entrepreneurship:</b> 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.</p> <p><b>Micro, Small &amp; Medium Enterprises (MSME):</b> 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</p> <p><b>Business Planning Process:</b> 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</p> <p style="text-align: right;"><b>L1,L2,L3</b></p>
<p><b>Course Outcomes:</b> After studying this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the construction management process.</li> <li>2. Understand and solve variety of issues that are encountered by every professional in discharging professional duties.</li> <li>3. Fulfill the professional obligations effectively with global outlook</li> </ol>
<p><b>Program Objectives:</b></p> <ul style="list-style-type: none"> <li>• Engineering knowledge</li> <li>• Problem analysis</li> <li>• Interpretation of data</li> </ul>
<p><b>Text Books:</b></p> <ol style="list-style-type: none"> <li>1. P C Tripathi and P N Reddy, “Principles of Management”, Tata McGraw-Hill Education</li> <li>2. Chitkara, K.K, “Construction Project Management: Planning Scheduling and Control”, Tata McGraw-Hill Publishing Company, New Delhi.</li> <li>3. Poornima M. Charantimath , “Entrepreneurship Development and Small Business Enterprise”, Dorling Kindersley (India) Pvt. Ltd., Licensees of Pearson Education</li> <li>4. Dr. U.K. Shrivastava “Construction Planning and Management”, Galgotia publications Pvt. Ltd. New Delhi.</li> <li>5. Bureau of Indian standards – IS 7272 (Part-1)- 1974 : Recommendations for labour output constant for building works :</li> </ol>
<p><b>Reference Books:</b></p> <ol style="list-style-type: none"> <li>1. Robert L Peurifoy, Clifford J. Schexnayder, Aviad Shapira, Robert Schmitt, “Construction Planning, Equipment, and Methods (Civil Engineering), McGraw-Hill Education</li> <li>2. Harold Koontz, Heinz Wehrich, “Essentials of Management: An International, Innovation, and Leadership perspective”, T.M.H. Edition, New Delhi</li> <li>3. Frank Harris, Ronald McCaffer with Francis Edum-Fotwe, “ Modern Construction Management”, Wiley-Blackwell</li> <li>4. Mike Martin, Roland Schinzinger, “Ethics in Engineering”, McGraw-Hill Education</li> <li>5. Chris Hendrickson and Tung Au, “Project Management for Construction - Fundamentals Concepts for Owners, Engineers, Architects and Builders”, Prentice Hall, Pittsburgh</li> <li>6. James L.Riggs , David D. Bedworth , Sabah U. Randhawa “ Engineerng Economics” 4 ed tata Mc Graw hill.</li> <li>7. S.C Sharma –“Construction Equipments and its management” – Khanna publishers</li> </ol>

<b>Course Title: WATER RESOURCES MANAGEMENT</b> [As per Choice Based Credit System (CBCS) scheme] <b>SEMESTER:VI</b>			
<b>Subject Code</b>	<b>17CV661</b>	<b>IA Marks</b>	<b>40</b>
<b>Number of Lecture Hours/Week</b>	<b>03</b>	<b>Exam Marks</b>	<b>60</b>
<b>Total Number of Lecture Hours</b>	<b>40</b>	<b>Exam Hours</b>	<b>03</b>
<b>CREDITS – 03</b>		<b>Total Marks-100</b>	
<b>Course objectives:</b> This course will enable students to;			
<ol style="list-style-type: none"> <li>1. Judge surface and ground water resources.</li> <li>2. Address the issues of water resources management.</li> <li>3. Learn the principles of integrated water resources management.</li> <li>4. Understand the legal framework of water policy.</li> <li>5. Know the different methods of water harvesting.</li> </ol>			
<b>Module -1</b>			
<b>Surface and Ground water Resources:</b> Hydrologic Cycle, Global water resources and Indian Water resources, Surface Water Resources, Water Balance, Available Renewable Water Resources, Water Scarcity, The Water Balance as a Result of Human Interference, Groundwater Resources, Types of Aquifers, Groundwater as a Storage Medium			
<b>L2, L3</b>			
<b>Module -2</b>			
<b>Water Resources Planning and Management:</b> Necessity, System components, planning scales, Approaches, planning and management aspects, Analysis, Models for impact prediction and evaluation, Adaptive Integrated Policies, Post Planning and management Issues.			
<b>L2, L3</b>			
<b>Module -3</b>			
<b>Integrated Water Resources Management:</b> Definition of IWRM, Principles, Implementation of IWRM, Legislative and Organizational Framework, Types and Forms of Private Sector Involvement.			
<b>L3, L4</b>			
<b>Module -4</b>			
<b>Water Governance and Water Policy:</b> Legal Framework of Water – Substance of National Water Laws – Other key issues – Changing incentives through Regulation - National Water Policy – National-Level Commissions – Irrigation Management Transfer Policies and Activities – Legal Registration of WUAs – Legal Changes in Water Allocation, – Role of Local Institutions – Community Based Organizations – Water Policy Reforms: India.			
<b>L2, L3</b>			
<b>Module -5</b>			
Water Harvesting and Conservation: Water Harvesting Techniques – Micro-catchments - Design of Small Water Harvesting Structures – Farm Ponds – Percolation Tanks – Yield from a Catchment, Rain water Harvesting-various techniques related to Rural and Urban area.			
<b>L2, L3</b>			
<b>Course outcomes:</b> After studying this course, students will be able to:			
<ol style="list-style-type: none"> <li>1. Assess the potential of groundwater and surface water resources.</li> <li>2. Address the issues related to planning and management of water resources.</li> <li>3. Know how to implement IWRM in different regions.</li> </ol>			

4. Understand the legal issues of water policy.
5. Select the method for water harvesting based on the area.

**Program Objectives:**

- Engineering knowledge
- Problem analysis
- Interpretation of data

**Text Books:**

1. K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2. H.M. Raghunath, "Ground Water", Wiley Eastern Publication, New Delhi.
3. Daniel P. Loucks and Eelco van Beek, "Water Resources Systems. Planning and Management", UNESCO Publication.
4. Mollinga, P. et al, "Integrated Water Resources Management", Water in South Asia Volume I, Sage Publications, 2006.
5. Singh, Chhatrapati "Water Rights in India," Ed: Chhatrapati Singh. Water Law in India: The Indian Law Institute, New Delhi, 1992.
6. Dhruva Narayana, G. Sastry, V. S. Patnaik, "Watershed Management", CSWCTRI, Dehradun, ICAR Publications, 1997.

**Reference Books:**

1. Lal, Ruttan. "Integrated Watershed Management in the Global Ecosystem". CRC Press, New York.
2. Heathcote, I. W. Integrated Watershed Management: Principles and Practice. 1988. John Wiley and Sons, Inc., New York.





## **CRITERION 1: CURRICULAR ASPECTS**

### **Key Indicator- 1.3 Curriculum Enrichment**

**Metric 1.3.1: Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum**

**ACADEMIC YEAR 2019-20**

### **DEPARTMENT OF MECHANICAL ENGINEERING**

<b>Sl. No.</b>	<b>Professional Ethics</b>		<b>Total No. of Courses</b>
	<b>Course Code</b>	<b>Course Name</b>	
1.	18CPC39/49	Constitution of India, Professional Ethics and Cyber Law	<b>02</b>
	<b>Environment &amp; Sustainability</b>		
2.	17ME562	Energy and Environment	



Course Title:	<b>Constitution of India, Professional Ethics and Cyber Law</b>		
Course Code:	<b>18CPC39/49</b>	CIE Marks	50
Course Type (Theory/Practical /Integrated)	<b>Theory</b>	SEE Marks	60
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	2
		Credits	1
<p><b>Course objectives :</b>            The course Constitution of India, Professional Ethics and Cyber Law 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> </ol> <p>To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.</p>			
<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> <ol style="list-style-type: none"> <li>Direct instructional method ( Low/Old Technology),</li> <li>Flipped classrooms (High/advanced Technological tools),</li> <li>Blended learning (Combination of both),</li> <li>Enquiry and evaluation based learning,</li> <li>Personalized learning,</li> <li>Problems based learning through discussion.</li> </ol> <p>(ii) 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>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.</p>			
<b>Module-2</b>			
<p>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.</p>			
<b>Module-3</b>			
<p>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.</p>			
<b>Module-4</b>			
<p>Professional / Engineering Ethics: Scope &amp; Aims of Engineering &amp; 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</p>			



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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 outcome (Course Skill Set)

CO1 | Have constitutional knowledge and legal literacy.

CO2 | Understand Engineering and Professional ethics and responsibilities of Engineers.

CO3 | 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.

#### Suggested Learning Resources:

##### Textbook:

1. “Constitution of India” (for Competitive Exams) - Published by Naidhruva Edutech Learning Solutions, Bengaluru. – 2022.
2. “Introduction to the Constitution of India”, (Students Edition.) by Durga Das Basu (**DD Basu**): Prentice –Hall, 2008.

##### Reference Books:

1. “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.
2. “The Constitution of India” by Merunandan K B: published by Merugu Publication, Second Edition, Bengaluru.
3. “Samvidhana Odu” - for Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kerekon. M.Govindarajan, S.Natarajan, V.S.Senthilkumar, “Engineering Ethics”, Prentice –Hall, 2004.



<b>ENERGY AND ENVIRONMENT</b>			
Course Code	<b>17ME562</b>	CIE Marks	40
Teaching Hours/Week (L:T:P: )	3-0-0	SEE Marks	60
Total Hours of Pedagogy	42	Total Marks	100
Credits	01	Exam Hours	03
<p><b>Teaching-Learning Process (General Instructions)</b>            These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.</p> <ol style="list-style-type: none"> <li>1. Summarize the basic concepts of energy, its distribution and general Scenario.</li> <li>2. Explain different energy storage systems, energy management, audit and economic analysis.</li> <li>3. Summarize the environment eco system and its need for awareness.</li> <li>4. Identify the various types of environment pollution and their effects.</li> <li>5. Discuss the social issues of the environment with associated acts.</li> </ol>			
<b>Module-1</b>			
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 afford ability, Social and environmental aspects, Investment			
<b>Module-2</b>			
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 Certain Energy Intensive Industries, Economic Analysis: Scope, Characterization of an Investment Project			
<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, 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>			



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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

Text books (Title, Authors, Edition, Publisher, Year.)

1. Textbook for Environmental Studies For Undergraduate Courses of all Branches of Higher Education by University grant commission and Bharathi Vidyapeeth Institute of environment education and Research ,Pune

2. De, B. K., Energy Management audit & Conservation, 2nd Edition, Vrinda Publication, 2010

Reference books (Title, Authors, Edition, Publisher, Year.)

1. Murphy, W. R., Energy Management, Elsevier, 2007. Environment pollution control Engineering by C S rao, New Age Internationalism, 2006, reprint 2015, 2nd edition

2. Environmental Studies by Dr. Suresh K Dhameja, 3rd Edition, S.K. Katariya and sons publications