

**ENERGY AND ENVIRONMENT**  
(OPEN ELECTIVE – I)

Course	Code	Credits	L-T-P	Assessment		Exam Duration
				SEE	CIA	
Energy And Environment	15ME562	03	3-0-0	80	20	3Hrs

**Course Objectives**

1. Understand energy scenario, energy sources and their utilization
2. Learn about methods of energy storage, energy management and economic analysis
3. Have proper awareness about environment and eco system.
4. Understand the environment pollution along with social issues and acts.

**Module – I**

**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. **8 Hours**

**Module – II**

**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 Certain Energy Intensive Industries

**Economic Analysis:** Scope, Characterization of an Investment Project

**10 Hours**

**Module – III**

**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.

**8 Hours**

**Module – IV**

**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.

**8 Hours**

#### **Module – V**

**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.

**8 Hours**

#### **Course Outcomes**

At the end of the course, the student will be able to:

1. Summarize the basic concepts of energy, its distribution and general Scenario.
2. Explain different energy storage systems, energy management, audit and economic analysis.
3. Summarize the environment eco system and its need for awareness.
4. Identify the various types of environment pollution and their effects.
5. Discuss the social issues of the environment with associated acts.

#### **TEXT BOOKS:**

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:**

1. Turner, W. C., Doty, S. and Truner, W. C., Energy Management Hand book, 7th edition, Fairmont Press, 2009.
2. Murphy, W. R., Energy Management, Elsevier, 2007.
3. Smith, C. B., Energy Management Principles, Pergamum, 2007
4. Environment pollution control Engineering by C S rao, New Age Inytermnational, 2006, reprint 2015, 2<sup>nd</sup> edition
5. Environmental studies, by Benny Joseph, Tata McGraw Hill, 2008, 2<sup>nd</sup> edition.

#### **E- Learning**

- India Energy Outlook 2015([www.iea.org/.../IndiaEnergyOutlook\\_WEO2015.pdf](http://www.iea.org/.../IndiaEnergyOutlook_WEO2015.pdf))
- Open courseware

## ENERGY ENGINEERING

Course	Code	Credits	L-T-P	Assessment		Exam Duration
				SEE	CIA	
Energy Engineering	15ME71	04	3-2-0	80	20	3Hrs

### Course learning objectives is to

- Understand energy scenario, energy sources and their utilization
- Learn about energy conversion methods and their analysis
- Study the principles of renewable energy conversion systems
- Understand the concept of green energy and zero energy.

### Module – I

**Thermal Energy conversion system:** Review of energy scenario in India, General Philosophy and need of Energy, Different Types of Fuels used for steam generation, Equipment for burning coal in lump form, stokers, different types, Oilburners, Advantages and Disadvantages of using pulverized fuel, Equipment for preparation and burning of pulverized coal, unit system and bin system. Pulverized fuel furnaces, cyclone furnace, Coal and ash handling, Generation of steam using forced circulation, high and supercritical pressures. Chimneys: Natural, forced, induced and balanced draft, Calculations and numerical involving height of chimney to produce a given draft. Cooling towers and Ponds. Accessories for the Steam generators such as Superheaters, De-superheater, control of superheaters, Economizers, Air preheaters and re-heaters.

**9 Hours**

### Module – II

**Diesel Engine Power System:** Applications of Diesel Engines in Power field. Method of starting Diesel engines. Auxiliaries like cooling and lubrication system, filters, centrifuges, Oil heaters, intake and exhaust system, Layout of diesel power plant.

**Hydro-Electric Energy:** Hydrographs, flow duration and mass curves, unit hydrograph and numerical. Storage and pondage, pumped storage plants, low, medium and high head plants, Penstock, water hammer, surge tanks, gates and valves. General layout of hydel power plants.

**7 Hours**

### Module – III

**Solar Energy:** Fundamentals; Solar Radiation; Estimation of solar radiation on horizontal and inclined surfaces; Measurement of solar radiation data, Solar Thermal systems: Introduction; Basics of thermodynamics and heat transfer; Flat plate collector; Evacuated Tubular Collector; Solar air collector; Solar concentrator; Solar distillation; Solar cooker; Solar refrigeration and air conditioning; Thermal energy storage systems, Solar Photovoltaic systems: Introduction; Solar cell Fundamentals; Characteristics and classification; Solar cell: Module, panel and Array construction; Photovoltaic thermal systems

**8 Hours**

### Module – IV

**Wind Energy:** 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, coefficient of performance of a wind mill rotor (Numerical Examples).

**Tidal Power:** Tides and waves as energy suppliers and their mechanics; fundamental characteristics of tidal power, harnessing tidal energy, limitations. **8 Hours**

#### **Module – V**

**Biomass Energy:** Introduction; Photosynthesis Process; Biofuels; Biomass Resources; Biomass conversion technologies; Urban waste to energy conversion; Biomass gasification.

**Green Energy:** Introduction: Fuel cells: Overview; Classification of fuel cells; Operating principles; Fuel cell thermodynamics Nuclear, ocean, MHD, thermoelectric and geothermal energy applications; Origin and their types; Working principles, Zero energy Concepts

**8 Hours**

#### **Course Outcomes**

At the end of the course, the student will be able to:

- Summarize the basic concepts of thermal energy systems,
- Identify renewable energy sources and their utilization.
- Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.
- Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas.
- Understand the concepts and applications of fuel cells, thermoelectric converter and MHD generator.
- Identify methods of energy storage for specific applications

#### **TEXT BOOKS:**

1. B H Khan, Non conventional energy resources, 3<sup>rd</sup> Edition, McGraw Hill Education
2. Principles of Energy conversion, A. W. Culp Jr., McGraw Hill. 1996

#### **REFERENCE BOOKS:**

1. S.P. Sukhatme, Solar Energy: principles of Thermal Collection and Storage, Tata McGraw-Hill (1984).
2. C. S. Solanki, "Solar Photovoltaic's: Fundamental Applications and Technologies, Prentice Hall of India, 2009.
3. L.L. Freris, Wind Energy Conversion Systems, Prentice Hall, 1990.

**Scheme of Examination:** Two questions to be set from each module. Students have to answer five full questions, choosing at least one full question from each module.

# ENVIRONMENTAL STUDIES

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

(Effective from the academic year 2015 -2016)

## SEMESTER - I/II

Subject Code	15CIV18/15CIV28	IA Marks	10
Number of Lecture Hours/Week	02	Exam Marks	40
Total Number of Lecture Hours	25	Exam Hours	02

### Course Objectives:

1. To identify the major challenges in environmental issues and evaluate possible solutions.
2. Develop analytical skills, critical thinking and demonstrate socio-economic skills for sustainable development.
3. To analyze an overall impact of specific issues and develop environmental management plan.

### Module - 1

Introduction: Environment - Components of Environment Ecosystem: Types & Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter, And Economic & Social Security. **2 Hours**

Impacts of Agriculture & Housing Impacts of Industry, Mining & Transportation Environmental Impact Assessment, Sustainable Development. **3 Hours**

### Module - 2

Natural Resources, Water resources – Availability & Quality aspects, Water borne diseases & water induced diseases, Fluoride problem in drinking water Mineral resources, Forest Wealth Material Cycles – Carbon Cycle, Nitrogen Cycle & Sulphur Cycle. **2 Hours**

Energy – Different types of energy, Conventional sources & Non Conventional sources of energy Solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass & Biogas Fossil Fuels, Hydrogen as an alternative energy. **3 Hours**

**Module -3**

Environmental Pollution – Water Pollution, Noise pollution, Land Pollution, Public Health Aspects. **2 Hours**

Global Environmental Issues: Population Growth, Urbanization, Land Management, Water & Waste Water Management. **3 Hours**

**Module -4**

Air Pollution & Automobile Pollution: Definition, Effects – Global Warming, Acid rain & Ozone layer depletion, controlling measures. **3 Hours**

Solid Waste Management, E - Waste Management & Biomedical Waste Management - Sources, Characteristics & Disposal methods. **2 Hours**

**Module - 5**

Introduction to GIS & Remote sensing, Applications of GIS & Remote Sensing in Environmental Engineering Practices. **2 Hours**

Environmental Acts & Regulations, Role of government, Legal aspects, Role of Non-governmental Organizations (NGOs) , Environmental Education & Women Education. **3 Hours**

**Course Outcome:**

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 abiotic components
4. Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues

**Text Books:**

1. Benny Joseph (2005), **“Environmental Studies”**, Tata McGraw – Hill Publishing Company Limited.
2. R.J.Ranjit Daniels and Jagadish Krishnaswamy, (2009), **“Environmental Studies”**, Wiley India Private Ltd., New Delhi.
3. R Rajagopalan, **“Environmental Studies – From Crisis to Cure”**, Oxford University Press, 2005,
4. Aloka Debi, **“Environmental Science and Engineering”**, Universities Press (India) Pvt. Ltd. 2012.

**Reference Books:**

1. Raman Sivakumar, **“Principals of Environmental Science and Engineering”**, Second Edition, Cengage learning Singapore, 2005
2. P. Meenakshi, **“Elements of Environmental Science and Engineering”**, Prentice Hall of India Private Limited, New Delhi, 2006
3. S.M. Prakash, **“Environmental Studies”**, Elite Publishers Mangalore, 2007
4. Erach Bharucha, **“Text Book of Environmental Studies”**, for UGC, University press, 2005
5. G.Tyler Miller Jr., **“Environmental Science – working with the Earth”**, Tenth Edition, Thomson Brooks /Cole, 2004
6. G.Tyler Miller Jr., **“Environmental Science – working with the Earth”**, Eleventh Edition, Thomson Brooks /Cole, 2006
7. Dr.Pratiba Sing, Dr.AnoopSingh and Dr.Piyush Malaviya, **“Text Book of Environmental and Ecology”**, Acme Learning Pvt. Ltd. New Delhi.

**ENERGY AND ENVIRONMENT**  
**B.E, V Semester, Mechanical Engineering**  
**[As per Choice Based Credit System (CBCS) scheme]**

<b>Course Code</b>	<b>17ME562</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 (8Hours per Module)</b>	<b>Exam Hours</b>	<b>03</b>

**Credits – 03**

**Course Objective:**

1. Understand energy scenario, energy sources and their utilization
2. Learn about methods of energy storage, energy management and economic analysis
3. Have proper awareness about environment and eco system.
4. Understand the environment pollution along with social issues and acts.

**Module - 1**

**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..

**Module - 2**

**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 Certain Energy Intensive Industries  
**Economic Analysis:** Scope, Characterization of an Investment Project

**Module - 3**

**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.

**Module - 4**

**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.

**Module - 5**

**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.

**Course outcomes:**

1. Summarize the basic concepts of energy, its distribution and general Scenario.
2. Explain different energy storage systems, energy management, audit and economic analysis.
3. Summarize the environment eco system and its need for awareness.
4. Identify the various types of environment pollution and their effects.
5. Discuss the social issues of the environment with associated acts.

**TEXT BOOKS:**

1. Textbook for Environmental Studies For Undergraduate Courses of all Branches of Higher Education by University grant commission and BharathiVidyapeeth Institute of environment education and Research ,Pune
2. De, B. K., Energy Management audit & Conservation, 2nd Edition, Vrinda Publication, 2010.

**REFERENCE BOOKS**

1. Turner, W. C., Doty, S. and Truner, W. C., Energy Management Hand book, 7th edition, Fairmont Press, 2009.
2. Murphy, W. R., Energy Management, Elsevier, 2007.
3. Smith, C. B., Energy Management Principles, Pergamum, 2007
4. Environment pollution control Engineering by C S Rao, New Age International, 2006, reprint 2015, 2<sup>nd</sup> edition.
5. Environmental studies, by Benny Joseph, Tata McGraw Hill, 2008, 2<sup>nd</sup> edition.

**ENERGY ENGINEERING**  
**B.E, VII Semester, Mechanical Engineering**  
**[As per Choice Based Credit System (CBCS) scheme]**

<b>Course Code</b>	<b>17ME71</b>	<b>CIE Marks</b>	<b>40</b>
<b>Number of Lecture Hours/Week</b>	<b>04</b>	<b>SEE Marks</b>	<b>60</b>
<b>Total Number of Lecture Hours</b>	<b>50(10 Hours per Module)</b>	<b>Exam Hours</b>	<b>03</b>

**Credits – 04**

**Course Objectives:**

- **Understand energy scenario, energy sources and their utilization**
- **Learn about energy conversion methods and their analysis**
- **Study the principles of renewable energy conversion systems**
- **Understand the concept of green energy and zero energy.**

**Module - 1**

**Thermal Energy conversion system:** Review of energy scenario in India, General Philosophy and need of Energy, Different Types of Fuels used for steam generation, Equipment for burning coal in lump form, stokers, different types, Oilburners, Advantages and Disadvantages of using pulverized fuel, Equipment for preparation and burning of pulverized coal, unit system and bin system. Pulverized fuel furnaces, cyclone furnace, Coal and ash handling, Generation of steam using forced circulation, high and supercritical pressures. Chimneys: Natural, forced, induced and balanced draft, Calculations and numerical involving height of chimney to produce a given draft. Cooling towers and Ponds. Accessories for the Steam generators such as Superheaters, De-superheater, control of superheaters, Economizers, Air preheaters and re-heaters.

**Module - 2**

**Diesel Engine Power System:** Applications of Diesel Engines in Power field. Method of starting Diesel engines. Auxiliaries like cooling and lubrication system, filters, centrifuges, Oil heaters, intake and exhaust system, Layout of diesel power plant.

**Hydro-Electric Energy:** Hydrographs, flow duration and mass curves, unit hydrograph and numerical. Storage and pondage, pumped storage plants, low, medium and high head plants, Penstock, water hammer, surge tanks, gates and valves. General layout of hydel power plants.

**Module - 3**

**Solar Energy:** Fundamentals; Solar Radiation; Estimation of solar radiation on horizontal and inclined surfaces; Measurement of solar radiation data, Solar Thermal systems: Introduction; Basics of thermodynamics and heat transfer; Flat plate collector; Evacuated Tubular Collector; Solar air collector; Solar concentrator; Solar distillation; Solar cooker; Solar refrigeration and air conditioning; Thermal energy storage systems, Solar Photovoltaic systems: Introduction; Solar cell Fundamentals; Characteristics and classification; Solar cell: Module, panel and Array construction; Photovoltaic thermal systems

**Module - 4**

**Wind Energy:** 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, coefficient of performance of a wind mill rotor (Numerical Examples).

**Tidal Power:** Tides and waves as energy suppliers and their mechanics; fundamental characteristics of tidal power, harnessing tidal energy, Limitations.

**Module - 5**

**Biomass Energy:** Introduction; Photosynthesis Process; Biofuels; Biomass Resources; Biomass conversion technologies; Urban waste to energy conversion; Biomass gasification.

**Green Energy:** Introduction: Fuel cells: Overview; Classification of fuel cells; Operating principles; Fuel cell thermodynamics Nuclear, ocean, MHD, thermoelectric and geothermal energy applications; Origin and their types; Working principles, Zero energy Concepts .

**Course outcomes:**

1. Summarize the basic concepts of thermal energy systems,
2. Identify renewable energy sources and their utilization.
3. Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.
4. Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas.
5. Understand the concepts and applications of fuel cells, thermoelectric converter and MHD generator.
6. Identify methods of energy storage for specific applications

**TEXT BOOKS:**

1. B H Khan, Non conventional energy resources, 3<sup>rd</sup> Edition, McGraw Hill Education
2. Principles of Energy conversion, A. W. Culp Jr., McGraw Hill. 1996

**REFERENCE BOOKS**

1. S.P. Sukhatme, Solar Energy: principles of Thermal Collection and Storage, Tata McGraw-Hill (1984).
2. C. S. Solanki, "Solar Photovoltaic's: Fundamental Applications and Technologies, Prentice Hall of India, 2009.
3. L.L. Freris, Wind Energy Conversion Systems, Prentice Hall, 1990.

# ENVIRONMENTAL STUDIES

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

(Effective from the academic year 2017 -2018)

## SEMESTER - I/II

Subject Code	17CIV18/17CIV28	IA Marks	20
Number of Lecture Hours/Week	02	Exam Marks	30
Total Number of Lecture Hours	25	Exam Hours	02

### Course Objectives:

1. To identify the major challenges in environmental issues and evaluate possible solutions.
2. Develop analytical skills, critical thinking and demonstrate socio-economic skills for sustainable development.
3. To analyze an overall impact of specific issues and develop environmental management plan.

### Module - 1

Introduction: Environment - Components of Environment Ecosystem: Types & Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter, And Economic & Social Security. **2 Hours**

Impacts of Agriculture & Housing Impacts of Industry, Mining & Transportation Environmental Impact Assessment, Sustainable Development. **3 Hours**

### Module - 2

Natural Resources, Water resources – Availability & Quality aspects, Water borne diseases & water induced diseases, Fluoride problem in drinking water Mineral resources, Forest Wealth Material Cycles – Carbon Cycle, Nitrogen Cycle & Sulphur Cycle. **2 Hours**

Energy – Different types of energy, Conventional sources & Non Conventional sources of energy Solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass & Biogas Fossil Fuels, Hydrogen as an alternative energy. **3 Hours**

**Module -3**

Environmental Pollution – Water Pollution, Noise pollution, Land Pollution, Public Health Aspects. **2 Hours**

Global Environmental Issues: Population Growth, Urbanization, Land Management, Water & Waste Water Management. **3 Hours**

**Module -4**

Air Pollution & Automobile Pollution: Definition, Effects – Global Warming, Acid rain & Ozone layer depletion, controlling measures. **3 Hours**

Solid Waste Management, E - Waste Management & Biomedical Waste Management - Sources, Characteristics & Disposal methods. **2 Hours**

**Module - 5**

Introduction to GIS & Remote sensing, Applications of GIS & Remote Sensing in Environmental Engineering Practices. **2 Hours**

Environmental Acts & Regulations, Role of government, Legal aspects, Role of Non-governmental Organizations (NGOs) , Environmental Education & Women Education.

**3 Hours****Course Outcome:**

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 abiotic components
4. Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues

**Text Books:**

1. Benny Joseph (2005), **“Environmental Studies”**, Tata McGraw – Hill Publishing Company Limited.
2. R.J.Ranjit Daniels and Jagadish Krishnaswamy, (2009), **“Environmental Studies”**, Wiley India Private Ltd., New Delhi.
3. R Rajagopalan, **“Environmental Studies – From Crisis to Cure”**, Oxford University Press, 2005,
4. Aloka Debi, **“Environmental Science and Engineering”**, Universities Press (India) Pvt. Ltd. 2012.

**Reference Books:**

1. Raman Sivakumar, **“Principals of Environmental Science and Engineering”**, Second Edition, Cengage learning Singapore, 2005
2. P. Meenakshi, **“Elements of Environmental Science and Engineering”**, Prentice Hall of India Private Limited, New Delhi, 2006
3. S.M. Prakash, **“Environmental Studies”**, Elite Publishers Mangalore, 2007
4. Erach Bharucha, **“Text Book of Environmental Studies”**, for UGC, University press, 2005
5. G.Tyler Miller Jr., **“Environmental Science – working with the Earth”**, Tenth Edition, Thomson Brooks /Cole, 2004
6. G.Tyler Miller Jr., **“Environmental Science – working with the Earth”**, Eleventh Edition, Thomson Brooks /Cole, 2006
7. Dr.Pratiba Sing, Dr.AnoopSingh and Dr.Piyush Malaviya, **“Text Book of Environmental and Ecology”**, Acme Learning Pvt. Ltd. New Delhi.

**B. E. MECHANICAL ENGINEERING**  
**Choice Based Credit System (CBCS) and Outcome Based Education (OBE)**  
**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. 02 Hrs  
**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. 02 Hrs  
**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. 02 Hrs  
**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. 03 Hrs

**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 abiotic 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 & Piyush Malaviya	Acme Learning Pvt. Ltd. New Delhi.	1 <sup>st</sup> Edition

## Functional English

Introduction	Importance of Languages	
Grammar	Parts of Speech, Usage of Preposition and Article, Punctuation	5 Hours
Tenses & Degrees of Comparison		3 Hours
Transformation of Sentences	Active-Passive, Affirmative-Negative, Exclamatory-Assertive, Interrogative-Assertive, Kinds of sentences	5 Hours
Direct-Indirect Speech		5 Hours
Vocabulary Usage	Homonyms, Correcting Spelling, One-word equivalents	7 Hours
Precis Writing		3 Hours
Essay/Report Writing		5 Hours
Letter Writing	Personal, Official, Applications	5 Hours
Idioms & Phrases	Meaning & Usage in sentences	5 Hours
Comprehension	Of an unseen passage	2 Hours
Elaboration	Expansion of ideas, proverbs	2 Hours
Presentation	Preparation of materials and presentation – step	3 Hours

### Suggested Text Books:

- 1) SLN Sharma & K Shankaranarayana “**Basic Grammar**”, Navakarnataka Publications.
- 2) Jones “**New International Business English**”, published by Cambridge University Press.

### Reference Books:

- 1) G. Sankaran, “**English Rank Scorer**”, Addone Publishing group, Thiruvananthapuram, Kerala
- 2) Wren & Martin “**English Grammar**”.
- 3) John Seely, “**Oxford Guide to Speaking and Writing**”, 2000

## Kannada Kali

- Lesson 1 : Introducing each other – 1.  
Personal Pronouns, Possessive forms, Interrogative words.
- Lesson 2 : Introducing each other – 2.  
Personal Pronouns, Possessive forms, Yes/No Type  
Interrogation
- Lesson 3 : About Ramanaya.  
Possessive forms of nons, dubitive question, Relative nouns
- Lesson 4 : Enquiring about a room for rent.  
Qualitative and quantitative adjectives.
- Lesson 5 : Enquiring about the college.  
Predicative forms, locative case.
- Lesson 6 : In a hotel  
Dative case defective verbs.
- Lesson 7 : Vegetable market.  
Numeral, plurals.
- Lesson 8 : Planning for a picnic.  
Imperative, Permissive, hortative.
- Lesson 9 : Conversation between Doctor and the patient.  
Verb- iru, negation – illa, non – past tense.
- Lesson 10: Doctors advise to Patient.  
Potential forms, no – past continuous.
- Lesson 11: Discussing about a film.  
Past tense, negation.
- Lesson 12: About Brindavan Garden.  
Past tense negation.

- Lesson 13: About routine activities of a student.  
Verbal Participle, reflexive form, negation.
- Lesson 14: Telephone conversation.  
Past and present perfect past continuous and their negation.
- Lesson 15: About Halebid, Belur.  
Relative participle, negation.
- Lesson 16: Discussing about examination and future plan.  
Simple conditional and negative
- Lesson 17: Karnataka (Lesson for reading)
- Lesson 18: Kannada Bhaashe (Lesson for reading)
- Lesson 19: Mana taruva Sangati alla (Lesson for reading)
- Lesson 20: bEku bEDagaLu (lesson for reading)

ಕನ್ನಡ ಮನಸು

1. ಶ್ರಾವಣ (ಕವನ) ದ.ರಾ.ಬೇಂದ್ರೆ
2. ಡಾ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ (ವ್ಯಕ್ತಿಚಿತ್ರ) ಎ.ಎನ್. ಮೂರ್ತಿರಾವ್
3. ದೋಣಿ ಹರಿಗೋಲುಗಳಲ್ಲಿ (ಪ್ರವಾಸ ಕಥನ) ಶಿವರಾಮ ಕಾರಂತ
4. ಅಣ್ಣಪ್ಪನ ರೇಷ್ಮೆ ಕಾಯಿಲೆ (ಪ್ರಬಂಧ) ಕುವೆಂಪು
5. ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ (ವಿನೋದ) ಗೋರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್
6. ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು(ವಿಜ್ಞಾನ ಲೇಖನ) ಬಿ.ಜಿ.ಎಲ್ ಸ್ವಾಮಿ
7. ಬೆಡ್ ನಂ. ಏಳು (ಕತೆ) ತ್ರಿವೇಣಿ
8. ರೊಟ್ಟಿ ಮತ್ತು ಕೋವಿ (ಕವನ) ಸು.ರಂ.ಎಕ್ಕಂಡಿ
9. ಗುಬ್ಬಚ್ಚಿ ಗೂಡು (ಅಂಕಂ ಬರಹ) ಲಂಕೇಶ್
10. ಚೀಂಕ್ರ ಮೇಸ್ತಿ ಮತ್ತು ಹಾವುಮೀನು (ಪರಿಸರ ಲೇಖನ) ಕೆ.ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
11. ಗಾಂಧಿ (ಕತೆ) ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ
12. ಬೆಲ್ವಿಯ ಹಾಡು (ಕವನ) ಸಿದ್ದಲಿಂಗಯ್ಯ
13. ಎಲ್ಲ ಹುಡುಗಿಯರ ಕನಸು (ಕವನ) ಸವಿತಾ ನಾಗಭೂಷಣ
14. ನೀರು (ಕತೆ) ಬಸವರಾಜ ಕುಕ್ಕರಹಳ್ಳಿ
15. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ ಸ್ವರೂಪ (ಪರಿಚಯ ಲೇಖನ) ರಹಮತ ತರೀಕೆರೆ
16. ತಂತ್ರಜ್ಞಾನ ಕಲಿಕೆಯಲ್ಲಿ ಭಾಷೆ (ತಂತ್ರಜ್ಞಾನ ಬರಹ) ಎಸ್.ಸುಂದರ್
17. ಕೊಣವೇಗೌಡ (ಕಾವ್ಯ) ಜಾನಪದ

## Functional English

Introduction	Importance of Languages	
Grammar	Parts of Speech, Usage of Preposition and Article, Punctuation	5 Hours
Tenses & Degrees of Comparison		3 Hours
Transformation of Sentences	Active-Passive, Affirmative-Negative, Exclamatory-Assertive, Interrogative-Assertive, Kinds of sentences	5 Hours
Direct-Indirect Speech		5 Hours
Vocabulary Usage	Homonyms, Correcting Spelling, One-word equivalents	7 Hours
Precis Writing		3 Hours
Essay/Report Writing		5 Hours
Letter Writing	Personal, Official, Applications	5 Hours
Idioms & Phrases	Meaning & Usage in sentences	5 Hours
Comprehension	Of an unseen passage	2 Hours
Elaboration	Expansion of ideas, proverbs	2 Hours
Presentation	Preparation of materials and presentation – step	3 Hours

### Suggested Text Books:

- 1) SLN Sharma & K Shankaranarayana “**Basic Grammar**”, Navakarnataka Publications.
- 2) Jones “**New International Business English**”, published by Cambridge University Press.

### Reference Books:

- 1) G. Sankaran, “**English Rank Scorer**”, Addone Publishing group, Thiruvananthapuram, Kerala
- 2) Wren & Martin “**English Grammar**”.
- 3) John Seely, “**Oxford Guide to Speaking and Writing**”, 2000

# ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

## Kannada Kali (ಕನ್ನಡ ಕಲಿ)

(for **Non – Kannadigas**, Common to all branches)

[As per Outcome Based Education(OBE) and Choice Based Credit System (CBCS) scheme]

Course Code	: 17KL39/49	SEE Marks: 30
Contact Hours/Week	: 01 hr Theory /week	CIE Marks: 20
Total Hours	: 15	Exam : 02 hours
Semester	: III / IV	Credit: 1

### Course Learning Objectives:

Learners are Non – Kannadigas, so this course will make them,

- To Read and understand the simple words in Kannada language
- To learn Vyavaharika Kannada (Kannada for Communication)
- will create a some interest on Kannada Language and Literature

### Syllabus:

Lesson 1 : Introducing each other – 1. Personal Pronouns, Possessive forms, Interrogative words.

Lesson 2 : Introducing each other – 2. Personal Pronouns, Possessive forms, Yes/No Type Interrogation

Lesson 3 : About Ramanaya. Possessive forms of nons, dubitive question, Relative nouns

Lesson 4 : Enquiring about a room for rent. Qualitative and quantitative adjectives.

Lesson 5 : Enquiring about the college. Predicative forms, locative case.

Lesson 6 : In a hotel Dative case defective verbs.

Lesson 7 : Vegetable market. Numeral, plurals.

Lesson 8 : Planning for a picnic. Imperative, Permissive, hortative.

Lesson 9 : Conversation between Doctor and the patient. Verb- iru, negation – illa, non – past tense.

Lesson 10: Doctors advise to Patient. Potential forms, no – past continuous.

Lesson 11: Discussing about a film. Past tense, negation.

Lesson 12: About Brindavan Garden. Past tense negation.

Lesson 13: About routine activities of a student. Verbal Participle, reflexive form, negation.

Lesson 14: Telephone conversation. Past and present perfect past continuous and their negation.

Lesson 15: About Halebid, Belur. Relative participle, negation.

Lesson 16: Discussing about examination and future plan. Simple conditional and negative

Lesson 17: Karnataka (Lesson for reading)

Lesson 18: Kannada Bhaashe (Lesson for reading)

Lesson 19: Mana taruva Sangati alla (Lesson for reading)

Lesson 20: bEku bEDagaLu (lesson for reading)

### ಪರೀಕ್ಷೆಯ ವಿಧಾನ :

- The **SEE question paper will be set for 30 marks** and the pattern of the **question paper will be objective type (MCQ)**.
- For the award of **20 CIE marks**, refer the University Scheme and Syllabus book.

### ಪಠ್ಯಪುಸ್ತಕಗಳು

1. Kannada Kali (ಕನ್ನಡ ಕಲಿ) – ಲಿಂಗದೇವರು ಹಳೇಮನೆ, A Text Book to Learn Kannada by Non – Kannadigas who come to study Diploma, Engineering and Health Sciences in Karnataka, ಪ್ರಕಟಣೆ: ಪ್ರಸಾರಾಂಗ ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಹಂಪಿ.
2. Spoken Kannada – ಮಾತಾಡುವ ಕನ್ನಡ, ಪ್ರಕಟಣೆ – ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ ಬೆಂಗಳೂರು.
3. Kannada Kirana - ಕನ್ನಡ ಕಿರಣ, ಪ್ರಕಟಣೆ – ಬೆಂಗಳೂರು ಇನ್ಸ್ಟಿಟ್ಯೂಟ್ ಅಪ್ ಲಾಂಗ್ವೇಜಸ್, ಬೆಂಗಳೂರು .

# ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

## ಕನ್ನಡ ಮನಸು

(for Kannadigas - Common to all branches )

[As per Outcome Based Education(OBE) and Choice Based Credit System (CBCS) scheme]

Course Code	: 17KL39/49	SEE Marks : 30
Contact Hours/Week	: 01 hr Theory /week	CIE Marks : 20
Total Hours	: 15	Exam : 02 Hours
Semester	: III / IV	Credit: 1

### ಕನ್ನಡ ಭಾಷಾ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

- ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಕನ್ನಡ ಭಾಷೆಯ ವ್ಯಾಕರಣದ ಬಗ್ಗೆ ಅರಿವು ಮೂಡಿಸುವುದು.
- ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಿಗಿರುವುದರಿಂದ ಆಡಳಿತ ಕನ್ನಡದ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಬಗ್ಗೆ ಒಲವು ಮತ್ತು ಆಸಕ್ತಿಯನ್ನು ಬೆಳೆಸುವುದು

### ಪಠ್ಯಕ್ರಮ

1. ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ
2. ವಿವಿಧ ರೀತಿಯ ಅರ್ಜಿ ನಮೂನೆಗಳು
3. ಪತ್ರ ವ್ಯವಹಾರ - ಸರ್ಕಾರಿ ಅರೆಸರ್ಕಾರಿ ಪತ್ರಗಳು - ಆಹ್ವಾನ ಪತ್ರಿಕೆ, ಜಾಹೀರಾತು, ಪತ್ರಿಕೆ ಪ್ರಕಟಣೆ ಇತ್ಯಾದಿ ಪತ್ರಗಳು
4. ಭಾಷೆ ಮತ್ತು ಬರಹ - ಡಾ. ಎಂ ಚಿದಾನಂದ ಮೂರ್ತಿ ರವರ ಭಾಷಾ ವಿಜ್ಞಾನದ ಮೂಲ ತತ್ವಗಳು ಪುಸ್ತಕದಿಂದ
5. ಭಾಷಾಭ್ಯಾಸ - ತತ್ಸಮ ತದ್ಭವ, ಸಮಾನಾರ್ಥಕ ಪದಗಳು, ವಿರುದ್ಧಾರ್ಥಕ ಪದಗಳು, ನಾನಾರ್ಥಕ ಪದಗಳು, ನುಡಿಗಟ್ಟುಗಳು, ಅನುಕರಣಾವ್ಯಯಗಳು (ದ್ವಿರುಕ್ತಿ) ಮತ್ತು ಜೋಡು ನುಡಿಗಳು, ಕನ್ನಡದ ದೇಶ್ಯ ಪದಗಳು, ಅನ್ಯದೇಶ್ಯ ಪದಗಳು.
6. ಭಾಷಾ ರಚನೆ - ವಾಕ್ಯ ಪದ್ಧತಿ ಮತ್ತು ಲೇಖನ ಚಿಹ್ನೆಗಳು, ಪತ್ರ ಲೇಖನ, ವರದಿ ಲೇಖನ, ಪ್ರಬಂಧ ಲೇಖನ.
7. ಶ್ರಾವಣ (ಕವನ) - ದ ರಾ ಬೇಂದ್ರೆ
8. ಡಾ. ವಿಶ್ವೇಶ್ವರಯ್ಯ - ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ (ವ್ಯಕ್ತಿ ಚಿತ್ರ) - ಎ ಎನ್ ಮೂರ್ತಿರಾವ್
9. ದೋಣಿ ಹರಿಗೋಲುಗಳಲ್ಲಿ (ಪ್ರವಾಸ ಕಥನ) - ಶಿವರಾಮ ಕಾರಂತ
10. ಅಣ್ಣಪ್ಪನ ರೇಷ್ಮೆ ಕಾಯಿಲೆ (ಪ್ರಬಂಧ) - ಕುವೆಂಪು
11. ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ? (ವಿನೋದ) - ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್
12. ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು (ವಿಜ್ಞಾನ ಲೇಖನ) - ಬಿ ಜಿ ಎಲ್ ಸ್ವಾಮಿ
13. ಬೆಡ್ ನಂಬರ್ ಏಳು (ಕತೆ) - ತ್ರಿವೇಣಿ
14. ರೊಟ್ಟಿ ಮತ್ತು ಕೋವಿ (ಕವನ) - ಸು ರಂ ಎಕ್‌ಕುಂಡಿ
15. ಗುಬ್ಬಚ್ಚಿಯ ಗೂಡು (ಅಂಕಣ ಬರಹ) - ಪಿ ಲಂಕೇಶ್

16. ಚೀಂಕ್ರ ಮೇಸ್ತಿ ಮತ್ತು ಅರಿಸ್ವಾಟೆಲ್ (ಪರಿಸರ ಲೇಖನ) – ಕೆ ಪಿ ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
17. ಗಾಂಧಿ (ಕತೆ) – ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ
18. ಬೆಲ್ವಿಯ ಹಾಡು (ಕವನ) – ಸಿದ್ದಲಿಂಗಯ್ಯ
19. ಎಲ್ಲ ಹುಡುಗಿಯರ ಕನಸು (ಕವನ) – ಸವಿತಾ ನಾಗಭೂಷಣ
20. ನೀರು (ಕತೆ) – ಬಸವರಾಜ ಕುಕ್ಕರಹಳ್ಳಿ
21. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯ ಒಂದು ಚಿತ್ರಣ (ಪರಿಚಯ ಲೇಖನ) – ರಹಮತ್ ತರೀಕೆರೆ
22. ವೃತ್ತಿ ಶಿಕ್ಷಣದಲ್ಲಿ ಕನ್ನಡ ಮಾಧ್ಯಮ (ತಂತ್ರಜ್ಞಾನ ಬರಹ) – ಎಸ್ ಸುಂದರ್
23. ಕೊಣವೇಗೌಡ (ಕಾವ್ಯ) – ಜಾನಪದ

### ಪರೀಕ್ಷೆಯ ವಿಧಾನ :

- The SEE question paper will be set for 30 marks and the pattern of the question paper will be objective type (MCQ).
- For the award of 20 CIE marks, refer the University Scheme and Syllabus book.

### ಪಠ್ಯಮಸ್ತಕಗಳು

1. ಕನ್ನಡ ಮನಸು – ಇಂಜಿನಿಯರಿಂಗ್ ಪ್ರಥಮ ಪದವಿ ತರಗತಿ ಕನ್ನಡ ಪಠ್ಯ, ಪ್ರಕಟಣೆ: ಪ್ರಸಾರಾಂಗ ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಹಂಪಿ.
2. ಕನ್ನಡ – ಆಡಳಿತ ಕನ್ನಡ (ಪತ್ರಿಕೆ – 1, ಬ್ಲಾಕ್ 4) ಪ್ರಕಟಣೆ: ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಮೈಸೂರು.
3. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಟ್ಟದ ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆಗಳ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಉತ್ತಮ ಪುಸ್ತಕಗಳು.

<b>B. E. MECHANICAL 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> </ul>			

- 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.

<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

# TECHNICAL ENGLISH - I

Semester	: I	CIE Marks	: 40
Course Code	: 18EGH18	SEE Marks	: 60
Teaching Hours/week (L:T:P)	: 0:2:0	Exam Hours	: 03
Credits : 01			

## Course Learning Objectives:

The course Technical English –I will enable the students ,

- To impart basic English grammar and essentials of language skills
- To train to identify the nuances of phonetics, intonation and enhance pronunciation skills
- To enhance with English vocabulary and language proficiency

## Language Lab

For augment LSRW and GV skills (Listening, Speaking, Reading, Writing and Grammar, Vocabulary) through tests, activities, exercises etc., comprehensive web-based learning and assessment systems can be referred.

## Module - I

### Introduction to Technical Communication

Fundamentals of Technical Communication Skills, Barriers to Effective Communication, Different styles in Technical Communication. Interpersonal Communication Skills, How to improve Interpersonal Communication Skills, Developing Interpersonal Skills.

Grammar : Basic English Grammar and Parts of Speech - Nouns, Pronouns, Adjectives, Verbs, Adverbs, Preposition, Articles, Conjunctions.

(RBT Levels : L1, L2 & L3)

## Module - II

### Introduction to Listening Skills and Phonetics – I

Introduction to Phonetics, Sounds Mispronounced, Silent and Non silent Letters, Homophones and Homonyms, Aspiration, Pronunciation of ‘The’, words ending ‘age’, some plural forms.

Articles: Use of Articles – Indefinite and Definite Articles.

(RBT Levels : L1, L2 & L3)

## Module - III

### Developing Listening Skills (Phonetics and Vocabulary Building) - II

Speech Sounds: Vowels and Consonants - Exercises on it. Preposition, kinds of Preposition and Prepositions often Confused. Word Accent – Rules for Word Accent, Stress Shift, Question Tags, Question Tags for Assertive Sentences(Statements) – Some Exceptions in Question Tags and Exercises, One Word Substitutes and Exercises.

Vocabulary – Synonyms and Antonyms, Exercises on it.

(RBT Levels : L1, L2 & L3)

#### Module - IV

##### Speaking Skills (Grammar and Vocabulary) – I

Syllables, Structures, Strong and Weak forms of words, Words formation - Prefixes and Suffixes (Vocabulary), Contractions and Abbreviations.

Spelling Rules and Words often Misspelt – Exercises on it. Word Pairs (Minimal Pairs) – Exercises, The Sequence of Tenses ( Rules in use of Tenses) and Exercises on it.

(RBT Levels : L1, L2 & L3)

#### Module - V

##### Speaking Skills (Grammar and Vocabulary) – II

Extempore/Public Speaking, Difference between Extempore/Public Speaking, and Guidelines for Practice.

Mother Tongue Influence(MTI) – South Indian Speakers, Various Techniques for Neutralisation of Mother Tongue Influence – Exercises, Listening Comprehension – Exercises. Information Transfer : Oral Presentation - Examples. Common Errors in Pronunciation.

(RBT Levels : L1, L2 & L3)

#### Course Outcomes:

**On completion of the course, students will be able to,**

- CO 1: Use grammatical English and essentials of language skills and identify the nuances of phonetics, intonation and flawless pronunciation
- CO 2: Implement English vocabulary at command and language proficiency
- CO 3: Identify common errors in spoken and written communication
- CO 4: Understand and improve the non verbal communication and kinesics
- CO 5: Perform well in campus recruitment, engineering and all other general competitive examinations

#### Question paper pattern for SEE (Semester end examination)

The SEE question paper will be set for 100 marks and the pattern of the question paper will be objective type (MCQ).

#### Textbooks

- 1) **Communication Skills** by Sanjay Kumar and Pushp Lata, Oxford University Press - 2018. **Refer it's workbook** for activities and exercises – “Communication Skills – I (A Workbook)” published by Oxford University Press – 2018.
- 2) **English Language Communication Skills (Lab Manual cum Workbook)**, Cengage learning India Pvt Limited [Latest Revised Edition] – 2018.

### Reference Books

- 1) **English for Technical Communication** by N.P.Sudharshana and C.Savitha, Cambridge University Press – 2016.
- 2) **Technical Communication** by Gajendra Singh Chauhan and Et al, Cengage learning India Pvt Limited [Latest Revised Edition] - 2018.
- 3) **Practical English Usage** by Michael Swan, Oxford University Press – 2016.
- 4) **High School English Grammar & Composition** by Wren and Martin, S Chandh & Company Ltd – 2015.
- 5) **Effective Technical Communication** – Second Edition by M. Ashraf Rizvi, McGraw Hill Education (India) Private Limited – 2018.

## TECHNICAL ENGLISH - II

<b>Semester</b>	<b>: II</b>	<b>CIE Marks</b>	<b>: 40</b>
<b>Course Code</b>	<b>: 18EGH28</b>	<b>SEE Marks</b>	<b>: 60</b>
<b>Teaching Hours/week (L:T:P)</b>	<b>: 0:2:0</b>	<b>Exam Hours</b>	<b>: 03</b>
<b>Credits : 01</b>			

### Course Objectives:

The course Technical English – II will enable the students,

- To implement English vocabulary at command and ensure language proficiency
- To Achieve better Technical writing and Presentation skills
- Identify the common errors in speaking and writing English
- Acquire Employment and Workplace communication skills

### Language Lab

For augment LSRW and GV skills (Listening, Speaking, Reading, Writing and Grammar, Vocabulary) through tests, activities, exercises etc., comprehensive web-based learning and assessment systems can be referred.

### Module - I

#### Identifying Common Errors in Writing and Speaking English

Subject Verb Agreement (Concord Rules with Exercises), Common errors in Subject-verb agreement, Noun-pronoun agreement, Adjective, Adverb, Verb, Sequence of Tenses, Misplaced modifiers, Articles and Prepositions, Common errors in Conjunctions, Word Order, Errors due to the Confusion of words, Common errors in the use of Idioms and phrases, Gender, Singular & Plural.

(RBT Levels : L1, L2 & L3)

### Module - II

#### Nature and Style of sensible writing

Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Importance of Proper Punctuation, The Art of Condensation (Precise writing) and Techniques in Essay writing, Common Errors due to Indianism in English Communication, Redundancies & Clichés.

(RBT Levels : L1, L2 & L3)

### Module - III

#### Technical Reading and Writing Practices

Effective Technical Reading and Writing Practices, Technical Reports writing and Technical Proposals Writing.

Grammar – Voice (Active and Passive Voices) and Reported Speech, Vocabulary – Analogies, Words Confused/Misused, Collocations. The

Listening Comprehension, Spotting Error Exercises, Sentence Improvement Exercises, Cloze Test and Theme Detection Exercises.

(RBT Levels : L1, L2 & L3)

#### Module - IV

##### Communication for Employment

Components of a Formal Letter, Formats and Types of Business Letters, Model Letter of Application (Cover Letter) with Resume, Email and Blog Writing, Reading Skills and Reading Comprehension.

(RBT Levels : L1, L2 & L3)

#### Module - V

##### Communication at Workplace

Interpersonal Communication Skills, Non-Verbal Communication Skills (Body Language), Group Discussion and Employment Interviews, Presentation skills and Formal Presentations by Students, Dialogues in Various Situations (Practical Sessions by Students).

(RBT Levels : L1, L2 & L3)

##### Course Outcomes:

On completion of the course, students will be able to,

- CO 1: Identify common errors in spoken and written communication
- CO 2: Get familiarized with English vocabulary and language proficiency
- CO 3: Improve nature and style of sensible writing and acquire employment and workplace communication skills
- CO 4: Improve their Technical Communication Skills through Technical Reading and Writing practices
- CO 5: Perform well in campus recruitment, engineering and all other general competitive examinations

##### Question paper pattern :

The SEE question paper will be set for 100 marks and the pattern of the question paper will be objective type (MCQ).

##### Textbooks :

1. **Technical Communication** by Gajendra Singh Chauhan and Et al, Cengage learning India Pvt Limited [Latest Revised Edition] - 2018.
2. **Communication Skills** by Sanjay Kumar and Pushp Lata, Oxford University Press - 2018. **Refer it's workbook** for activities and exercises – “Communication Skills – II (A Workbook)” published by Oxford University Press – 2018.

### Reference Books :

1. **High School English Grammar & Composition** by Wren and Martin, S Chandh & Company Ltd – 2015.
2. **English Language Communication Skills – Lab Manual cum Workbook**, Cengage learning India Pvt Limited [Latest Revised Edition] – 2018.
3. **Technical Communication – Principles and Practice**, Third Edition by Meenakshi Raman and Sangeetha Sharma, Oxford University Press 2017.
4. **Effective Technical Communication – Second Edition** by M Ashraf Rizvi, McGraw Hill Education (India) Private Limited – 2018.
5. **Intermediate Grammar, Usage and Composition** by M.L.Tichoo, A.L.Subramanian, P.R.Subramanian, Orient Black Swan – 2016.

## CONSTITUTION OF INDIA, PROFESSIONAL ETHICS & HUMAN RIGHTS

Subject Code	15CPH18/15CPH28	IA Marks	10
Number of Lecture Hours/Week	02	Exam Marks	40
Total Number of Lecture Hours	25	Exam Hours	02

### Course objectives:

1. To provide basic information about Indian constitution.
2. To identify individual role and ethical responsibility towards society.
3. To understand human rights and its implications

### Module 1

Introduction to the Constitution of India, The Making of the Constitution and Salient features of the Constitution. **2 Hours**

Preamble to the Indian Constitution Fundamental Rights & its limitations. **3 Hours**

### Module 2

Directive Principles of State Policy & Relevance of Directive Principles State Policy Fundamental Duties. **2 Hours**

Union Executives – President, Prime Minister Parliament Supreme Court of India. **3 Hours**

### Module 3

State Executives – Governor Chief Minister, State Legislature High Court of State. **2 Hours**

Electoral Process in India, Amendment Procedures, 42<sup>nd</sup>, 44th, 74th, 76th, 86th & 91<sup>st</sup> Amendments. **3 Hours**

### Module 4

Special Provision for SC & ST Special Provision for Women, Children & Backward Classes Emergency Provisions. Human Rights –Meaning and Definitions, Legislation Specific Themes in Human Rights- Working of National Human Rights Commission in India **3 Hours**

Powers and functions of Municipalities, Panchyats and Co - Operative Societies. **2 Hours**

### Module 5

Scope & Aims of Engineering Ethics, Responsibility of Engineers Impediments to Responsibility. **2 Hours**

Risks, Safety and liability of Engineers, Honesty, Integrity & Reliability in Engineering.

**3 Hours**

**Course outcomes:**

After study of the course, the students are able to

- Have general knowledge and legal literacy and thereby to take up competitive examinations
- Understand state and central policies, fundamental duties
- Understand Electoral Process, special provisions
- Understand powers and functions of Municipalities, Panchayats and Co-operative Societies, and
- Understand Engineering ethics and responsibilities of Engineers.
- Have an awareness about basic human rights in India

**Text Books:**

1. Durga Das Basu: **“Introduction to the Constitution on India”**, (Students Edn.) Prentice –Hall EEE, 19<sup>th</sup> / 20<sup>th</sup> Edn., 2001
2. Charles E. Haries, Michael S Pritchard and Michael J. Robins **“Engineering Ethics”** Thompson Asia, 2003-08-05.

**Reference Books:**

1. M.V.Pylee, **“An Introduction to Constitution of India”**, Vikas Publishing, 2002.
2. M.Govindarajan, S.Natarajan, V.S.Senthilkumar, **“Engineering Ethics”**, Prentice –Hall of India Pvt. Ltd. New Delhi, 2004
3. Brij Kishore Sharma, **“Introduction to the Constitution of India”**, PHI Learning Pvt. Ltd., New Delhi, 2011.
4. Latest Publications of Indian Institute of Human Rights, New Delhi.

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# VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

## Constitution of India, Professional Ethics and Human Rights (CPH)

(Common to all branches)

[As per Outcome Based Education(OBE) and Choice Based Credit System (CBCS) scheme]  
(Effective from the academic year 2018-19)

Course Code	: 17CPH39/49	SEE Marks: 30
Contact Hours/Week	: 01 hr Theory /week	CIE Marks: 20
Total Hours	: 15	Exam: 02 hr
Semester	: III / IV	Credit: 1

**Course Learning Objectives:** This course (17CPH39/49) will enable the students

- To assimilate and get familiarized with basic information about Indian constitution and provide overall legal literacy to the young technocrats to manage complex societal issues in the present scenario.
- To identify their individual roles and ethical responsibilities towards society.
- To understand engineering ethics & responsibilities, through the learning of these topics students will be able to understand human rights/ values and its implications in their life.

### MODULE- I

#### Introduction and Basic Information about 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) & it's present relevance in our society with examples. Fundamental Duties and its Scope and significance in Nation building.

(Duration: 03 Hours & RBT Levels: L1, L2 & L3)

### MODULE- II

#### 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 (Article 370,371,371J) for some States.

(Duration: 03 Hours & RBT Levels: L1, L2 & L3)

## **MODULE-III**

### **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. Recent Amendments with explanation. Important Judgements with Explanation and its impact on society (from the list of Supreme Court Judgements).
- Emergency Provisions, types of Emergencies and it's consequences.

**(Duration: 03 Hours & RBT Levels: L1, L2 & L3)**

## **Module- IV**

### **Constitutional Provisions/ Local Administration/ Human Rights**

- Special Constitutional Provisions for SC & ST, OBC, Special Provision for Women, Children & Backward Classes.
- Local Administration : Powers and functions of Municipalities and Panchyats System. Co – Operative Societies and Constitutional and Non-constitutional Bodies.
- Human Rights/values – Meaning and Definitions, Legislative Specific Themes in Human Rights and Functions/ Roles of National Human Rights Commission of India. Human Rights (Amendment Act)2006.

**(Duration: 03 Hours & RBT Levels: L1, L2 & L3)**

## **MODULE- V**

### **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, 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.

**(Duration: 03 Hours & RBT Levels: L1, L2 & L3)**

## Course Outcomes: On completion of this course, students will be able to,

CO1: Have general knowledge and legal literacy about Indian Constitution and there by it helps to take up competitive examinations & to manage/face complex societal issues in society.

CO2: Understand state and central policies( Union and State Executive), fundamental Rights & their duties.

CO3: Understand Electoral Process, Amendments and special provisions in Constitution.

CO4: Understand powers and functions of Municipalities, Panchayats and Co-operative Societies, with Human Rights and NHRC.

CO5: Understand Engineering & Professional ethics and responsibilities of Engineers.

## Question paper pattern for SEE and CIE.

- The **SEE question paper will be set for 30 marks** and the pattern of the **question paper will be objective type (MCQ)**.
- For the award of **20 CIE marks**, refer the University Scheme and Syllabus book.

## Text Books

- 1) **Durga Das Basu (DD Basu):** “Introduction to the Constitution on India”, (Students Edition.) Prentice –Hall EEE, 19th / 20th Edn., (Latest Edition) or 2008.
- 2) **Shubham Singles, Charles E. Haries, and Et al :** “Constitution of India and Professional Ethics” by Cengage Learning India Private Limited, Latest Edition – 2018.

## Reference Books

1. **M.Govindarajan, S.Natarajan, V.S.Senthilkumar,** “Engineering Ethics”, Prentice –Hall of India Pvt. Ltd. New Delhi, 2004
2. **M.V.Pylee,** “An Introduction to Constitution of India”, Vikas Publishing, 2002.
3. Latest Publications of **NHRC - Indian Institute of Human Rights,** New Delhi.

## Web Links and Video Lectures

[www.unacademy.com/lesson/future-perfect-tense/YQ9NSNQZ](http://www.unacademy.com/lesson/future-perfect-tense/YQ9NSNQZ)

<https://successesacademy>

<b>B. E. MECHANICAL 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> </ul>			

- 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.

<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