	<p style="text-align: center;">S J P N Trust's</p> <p style="text-align: center;"><b>Hirasugar Institute of Technology, Nidasoshi.</b></p> <p style="text-align: center;"><i>Inculcating Values, Promoting Prosperity</i></p> <p style="text-align: center;">Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.</p> <p style="text-align: center;"><b>Accredited at 'A' Grade by NAAC</b></p> <p style="text-align: center;"><b>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME</b></p>	Institute
		NAAC
		1.3.1
		2020-21

### 1.3.1 List of Supporting Documents

Sl.No	Name of Document
1	Environmental related & Professional Ethics subjects syllabus
2	Environment related Projects
3	List of Activities conducted in Departments
4	Environment related subjects
5	List of Training Activities
6	Gender Equality in Employment Opportunities
7	Women Empowerment Cell Activity
8	NSS Association Activities

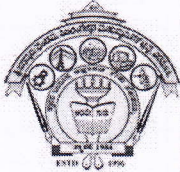


B. E. Common to all Branches Choice Based Credit System (CBCS) and Outcome Based Education (OBE) SEMESTER – V				
ENVIRONMENTAL STUDIES				
Course Code	18CIV59	CIE Marks	40	
Teaching Hours / Week (L:T:P)	(1:0:0)	SEE Marks	60	
Credits	01	Exam Hours	02	
Module - 1				
Ecosystems (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake. Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.				
Module - 2				
Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind. Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.				
Module - 3				
Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution. Waste Management & Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.				
Module - 4				
Global Environmental Concerns(Concept, policies and case-studies):Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.				
Module - 5				
Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs. Field work: Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.				
Course outcomes: At the end of the course, students will be able to:				
<ul style="list-style-type: none"><li>Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,</li><li>Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.</li><li>Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.</li><li>Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.</li></ul>				
Question paper pattern:				
<ul style="list-style-type: none"><li>The Question paper will have 100 objective questions.</li><li>Each question will be for 01 marks</li><li>Student will have to answer all the questions in an OMR Sheet.</li><li>The Duration of Exam will be 2 hours.</li></ul>				
Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
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	Principals of	Raman Sivakumar	Cengage learning,	2 <sup>nd</sup> Edition, 2005



B. E. Common to all Programmes				
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)				
SEMESTER - III				
CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (CPC)				
Course Code	18CPC39/49	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,				
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.				
<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>				
Sl.	Title of the Book	Name of the	Name of the	Edition and Year




	<p style="text-align: center;"><b>S J P N Trust's</b>  <b>Hirasugar Institute of Technology, Nidasoshi.</b>  <i>Inculcating Values, Promoting Prosperity</i>          Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.</p>		ECE Dept
			Students Project
	<p style="text-align: center;"><b>Accredited at 'A' Grade by NAAC</b>  <b>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME</b></p>		Environment Project
			2020-21

In Electronics & Communication Engineering Department				
Environment Related Final Year Project Details 2020-21				
Batch No.	USN	Student Name	Project Title	Guide
B13	2HN17EC007	Ashwini R Kori	Smart Waste Segregation and Clearance System using Integrated mobile robotic System	Prof. B.P.Khot
	2HN17EC008	Avinash Sunthe		
	2HN17EC015	Nisarga Bagalkot		
	2HN17EC023	Sangeetha Ragha		

  
 Electronics & Comm. Engr. Dept.  
**HSIT NIDASOSHI**



	<p style="text-align: center;"><b>S J P N Trust's</b>  <b>Hirasugar Institute of Technology, Nidasoshi</b>  <i>Inculcating Values, Promoting Prosperity</i>          Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.  <b>Accredited at 'A' Grade by NAAC</b>  <b>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME.</b></p>		<b>Institute</b>
			E & E Dept
			Criteria I/Activities
			2020-21

## Department of Electrical and Electronics Engineering

### List of Activities conducted in AY 2020-21

Sl. No	Nature of Co-Curricular Activity	Year & Date of scheduled/conducted	Number of Participants	
			Boys	Girls
1	Rally for Awareness Program on "Energy Conservation" on the occasion of National Energy Conservation Week-2020-21	23/12/2020	132	148
2	Awareness Program on "Energy Conservation" on the occasion of National Energy Conservation Week.	23/12/2020	117	133
3	Poster Presentation	09/01/2021	18	11
4	Yoga for mental Peace	12/02/2021	16	10

  
**Dr. B. V. Madiggond**  
 Prof. & Head BE,ME,Ph.D.  
 Dept. of Electrical & Electronics Engg  
 HST NIDASOSHI-591 236





S J P N Trust's

**Hirasugar Institute of Technology, Nidasoshi**

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**Accredited at 'A' Grade by NAAC**

**Programmes Accredited by NBA: CSE, ECE, EEE & ME.**

Mech. Engg. Dept.

**Environment Related  
Subjects**

AY:2020-21

## **ENVIRONMENT RELATED SUBJECTS**

- 17 Scheme Syllabus**

Sl. No.	Subject	Subject Code
1	Energy and Environment	17ME562
2	Energy Auditing	17ME661
3	Energy Engineering	17ME71
4	Green Manufacturing	17ME834

- 18 Scheme Syllabus**

Sl. No.	Subject	Subject Code
1	Environmental Studies	18CIV59
2	Energy Engineering	18ME81

*[Signature]*  
11/02/2022

HOD

**Mechanical Engg.  
HIT, Nidasoshi**



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

<b>Course Code</b>	<b>17ME661</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>

**Credits – 03**

**Course Objectives:**

- Understand energy scenario and general aspects of energy audit.
- Learn about methods and concept of energy audit
- Understand the energy utilization pattern including wastage and its management

**Module - 1**

**General Aspects:** Review of energy scenario in India, General Philosophy and need of Energy Audit and Management, Basic elements and measurements - Mass and energy balances – Scope of energy auditing industries - Evaluation of energy conserving opportunities, Energy performance contracts, Fuel and Energy substitution, Need for Energy Policy for Industries, National & State level energy Policies

**Module - 2**

**Energy Audit Concepts:** Need of Energy audit - Types of energy audit – Energy management (audit) approach - understanding energy costs - Benchmarking – Energy performance - Matching energy use to requirement - Maximizing system efficiencies - Optimizing the input energy requirements - Duties and responsibilities of energy auditors - Energy audit instruments - Procedures and Techniques.

**Module - 3**

**Principles and Objectives of Energy Management:** Design of Energy Management Programmes - Development of energy management systems – Importance - Indian need of Energy Management - Duties of Energy Manager - Preparation and presentation of energy audit reports - Monitoring and targeting, some case study and potential energy savings.

**Module - 4**

**Thermal Energy Management:** Energy conservation in boilers - steam turbines and industrial heating systems - Application of FBC - Cogeneration and waste heat recovery - Thermal insulation - Heat exchangers and heat pumps – HVC industries - Building Energy Management.

**Module - 5**

**Electrical Energy Management:** Supply side Methods to minimize supply-demand gap - Renovation and modernization of power plants - Reactive power management – HVDC- FACTS - Demand side - Conservation in motors - Pumps and fan systems – Energy efficient motors.

**Course outcomes:**

- Understand the basic concepts of energy audit and energy management
- Explain different types of energy audit, maximizing and optimizing system efficiency.
- Summarize energy management systems, prepare and present energy audit report



- Identify energy saving potential of thermal and electrical systems
- Discuss Energy audit instruments, Procedures and Techniques.

**TEXT BOOKS:**

1. Murphy, W. R., Energy Management, Elsevier, 2007.
2. Smith, C. B., Energy Management Principles, Pergamum, 2007
3. Handbook of Energy Audit, Sonal Desai, Mcgraw Hill Education Private Ltd.,

**REFERENCE BOOKS**

1. Turner, W. C., Doty, S. and Truner, W. C., Energy Management Hand book, 7th edition, Fairmont Press, 2009.
2. De, B. K., Energy Management audit & Conservation, 2nd Edition, Vrinda Publication, 2010.
3. Energy Management Handbook – W.C. Turner (John Wiley and Sons, A Wiley  
a. Interscience publication)
4. Industrial Energy Management and Utilisation –L.C. Witte, P.S. Schmidt, D.R. Brown  
(Hemisphere Publication, Washington, 1988)
5. Industrial Energy Conservation Manuals, MIT Press, Mass, 1982
6. Energy Conservation guide book Patrick/Patrick/Fardo (Prentice hall1993)

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

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

**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



<b>Module - 4</b>
<p><b>Wind Energy:</b> Properties of wind, availability of wind energy in India, wind velocity and power from wind; major problems associated with wind power, wind machines; Types of wind machines and their characteristics, horizontal and vertical axis wind mills, coefficient of performance of a wind mill rotor (Numerical Examples).</p> <p><b>Tidal Power:</b> Tides and waves as energy suppliers and their mechanics; fundamental characteristics of tidal power, harnessing tidal energy, Limitations.</p>
<b>Module - 5</b>
<p><b>Biomass Energy:</b> Introduction; Photosynthesis Process; Biofuels; Biomass Resources; Biomass conversion technologies; Urban waste to energy conversion; Biomass gasification.</p> <p><b>Green Energy:</b> 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 .</p>
<p><b>Course outcomes:</b></p> <ol style="list-style-type: none"> <li>1. Summarize the basic concepts of thermal energy systems,</li> <li>2. Identify renewable energy sources and their utilization.</li> <li>3. Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.</li> <li>4. Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas.</li> <li>5. Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator.</li> <li>6. Identify methods of energy storage for specific applications</li> </ol>
<p><b>TEXT BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. B H Khan, Non conventional energy resources, 3<sup>rd</sup> Edition, McGraw Hill Education</li> <li>2. Principles of Energy conversion, A. W. Culp Jr., McGraw Hill. 1996</li> </ol>
<p><b>REFERENCE BOOKS</b></p> <ol style="list-style-type: none"> <li>1. S.P. Sukhatme, Solar Energy: principles of Thermal Collection and Storage, Tata McGraw-Hill (1984).</li> <li>2. C. S. Solanki, "Solar Photovoltaic's: Fundamental Applications and Technologies, Prentice Hall of India, 2009.</li> <li>3. L.L. Freris, Wind Energy Conversion Systems, Prentice Hall, 1990.</li> </ol>

**Green Manufacturing**  
**B.E, VIII Semester, Mechanical Engineering**  
**[As per Choice Based Credit System (CBCS) scheme]**

<b>Course Code</b>	<b>17ME834</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>

**Credits – 03**

**Course Objectives:**

- **Acquire a broad understanding of sustainable manufacturing, green product and process**
- **Understand the analytical tools, techniques in green manufacturing**
- **Understand the structures of sustainable manufacturing, environmental and management practice.**

**Module - 1**

**Introduction to Green Manufacturing**

Why Green Manufacturing, Motivations and Barriers to Green Manufacturing, Environmental Impact of Manufacturing, Strategies for Green Manufacturing.

**The Social, Business, and Policy Environment for Green Manufacturing**

Introduction, The Social Environment—Present Atmosphere and Challenges for Green Manufacturing, The Business Environment: Present Atmosphere and Challenges, The Policy Environment—Present Atmosphere and Challenges for Green Manufacturing.

**Module - 2**

**Metrics for Green Manufacturing**

Introduction, Overview of Currently Used Metrics, Overview of LCA Methodologies, Metrics Development Methodologies, Outlook and Research Needs.

**Green Supply Chain**

Motivation and Introduction, Definition, Issues in Green Supply Chains (GSC), Techniques/Methods of Green Supply Chain, Future of Green Supply Chain.

**Module - 3**

**Closed-Loop Production Systems**

Life Cycle of Production Systems, Economic and Ecological Benefits of Closed-Loop Systems, Machine Tools and Energy Consumption, LCA of Machine Tools, Process Parameter Optimization, Dry Machining and Minimum Quantity Lubrication, Remanufacturing, Reuse, Approaches for Sustainable Factory Design.

**Semiconductor Manufacturing**

Overview of Semiconductor Fabrication, Micro fabrication Processes, Facility Systems, Green Manufacturing in the Semiconductor Industry: Concepts and Challenges, Use-Phase Issues with Semiconductors, Example of Analysis of Semiconductor Manufacturing.

**Module - 4**

**Environmental Implications of Nano-manufacturing**

Introduction, Nano-manufacturing Technologies, Conventional Environmental Impact of Nano-manufacturing, Unconventional Environmental Impact of Nano-manufacturing, Life Cycle Assessment (LCA) of Nanotechnologies.



## **Green Manufacturing Through Clean Energy Supply**

Introduction, Clean Energy Technologies, Application Potential of Clean Energy Supplying Green Manufacturing

### **Module - 5**

#### **Packaging and the Supply Chain: A Look at Transportation**

Introduction, Background, Recommended Method to Determine Opportunities for Improved Pallet Utilization, Discussion.

#### **Enabling Technologies for Assuring Green Manufacturing**

Motivation, Process Monitoring System, Applying Sensor Flows in Decision Making: Automated Monitoring, Case Study.

#### **Concluding Remarks and Observations about the Future**

Introduction, Evolution of Manufacturing, Leveraging Manufacturing, Energy of Labor.

#### **Course outcomes:**

- **Understand the basic design concepts, methods, tools, the key technologies and the operation of sustainable green manufacturing.**
- **Apply the principles, techniques and methods to customize the learned generic concepts to meet the needs of a particular industry/enterprise.**
- **Identify the strategies for the purpose of satisfying a set of given sustainable green manufacturing requirements.**
- **Design the rules and processes to meet the market need and the green manufacturing requirements by selecting and evaluating suitable technical, managerial / project management and supply chain management scheme.**

B. E. MECHANICAL ENGINEERING				
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)				
SEMESTER – V				
ENVIRONMENTAL STUDIES				
Course Code	18CIV59	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:				
<ul style="list-style-type: none"><li>• CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,</li><li>• CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.</li><li>• CO3: Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.</li><li>• CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.</li></ul>				
Question paper pattern:				
<ul style="list-style-type: none"><li>• The Question paper will have 100 objective questions.</li><li>• Each question will be for 01 marks</li><li>• Student will have to answer all the questions in an OMR Sheet.</li><li>• The Duration of Exam will be 2 hours.</li></ul>				
Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook/s				
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

**Scheme of Examination:**

One question from Part A: 40 marks

One question from Part B: 40 Marks

Viva voce: 20 Marks

Total: 100 Marks

<b>B. E. MECHANICAL ENGINEERING</b> <b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b> <b>SEMESTER - VIII</b>			
<b>ENERGY ENGINEERING</b>			
Course Code	<b>18ME81</b>	CIE Marks	40
Teaching Hours /Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b> <ul style="list-style-type: none"> <li>Understand energy scenario, energy sources and their utilization</li> <li>Learn about energy conversion methods</li> <li>Study the principles of renewable energy conversion systems.</li> </ul>			
<b>Module-1</b>			
<b>STEAM GENERATORS</b> Coal and ash handling, Generation of steam using forced circulation, high and supercritical pressures, LaMount, Benson, Velox, Loeffler, Schmidt steam generators, Cooling towers and Ponds, Accessories such as Superheaters, De-superheater, Economizers, Air preheaters.			
<b>Module-2</b>			
<b>Solar Energy:</b> Introduction, Solar radiation at the earth's surface, Solar radiation measurements, Flat plate collectors, Focussing collectors, Solar pond, Solar electric power generation-Solar photovoltaics. <b>Biomass Energy:</b> Photosynthesis, photosynthetic oxygen production, energy plantation. Bio Chemical Route: Biogas production from organic wastes by anaerobic fermentation, Bio gas plants-KVIC, Janta, Deenbandhu models, factors affecting bio gas generation. Thermal gasification of biomass, updraft and downdraft			
<b>Module-3</b>			
<b>Geothermal Energy:</b> Forms of geothermal energy, Dry steam, wet steam, hot dry rock and magmatic chamber systems. <b>Tidal Energy:</b> Tidal power, Site selection, Single basin and double basin systems, Advantages and disadvantages of tidal energy. <b>Wind Energy:</b> Wind energy-Advantages and limitations, wind velocity and wind power, Basic components of wind energy conversion systems, horizontal and vertical axis wind mills, coefficient of performance of a wind mill rotor, Applications of wind energy.			
<b>Module-4</b>			
<b>Hydroelectric plants:</b> Advantages & disadvantages of water power, Hydrographs and flow duration curves-numericals, Storage and pondage, General layout of hydel power plants- components such as Penstock, surge tanks, spill way and draft tube and their applications, pumped storage plants, Detailed classification of hydroelectric plants, water hammer. <b>Ocean Thermal Energy:</b> Ocean thermal energy conversion, Principle and working of Rankine cycle, Problems associated with OTEC.			
<b>Module-5</b>			
<b>NUCLEAR ENERGY</b> Principles of release of nuclear energy-Fusion and fission reactions. Nuclear fuels used in the reactors, Chain reaction, Moderation, breeding, Multiplication and thermal utilization factors. General components of a nuclear reactor and materials, Brief description-Pressurized water reactor, Boiling water reactor, Sodium graphite reactor, Fast Breeder reactor, Homogeneous graphite reactor and gas cooled reactor, Radiation hazards, Shielding, Nuclear waste, Radioactive waste disposal.			
<b>Course Outcomes:</b> At the end of the course the student will be able to: CO1: Understand the construction and working of steam generators and their accessories.			

CO2: Identify renewable energy sources and their utilization.

CO3: Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, nuclear, hydel and tidal.

**Question paper pattern:**

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

Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Power Plant Engineering	P. K. Nag	Tata McGraw Hill Education Private Limited, New Delhi	Third Edition, 2012.
2	Power Plant Engineering	Arora and Domkundwar	Dhanpat Rai & Co. (P) Ltd.	Sixth Edition, 2012.
3	Non-conventional Sources of Energy	G.D.Rai	Khanna Publishers, New Delhi	Fifth Edition, 2015.
4	Non-conventional energy resources	B H Khan	McGraw Hill Education	3rd Edition
<b>Reference Books</b>				
1	Power Plant Engineering	R. K. Rajput	Laxmi publication New Delhi	
2	Principles of Energy conversion	A. W. Culp Jr	McGraw Hill	1996
3	Power Plant Technology	M.M. EL-Wakil	McGraw Hill International	1994
4	Solar Energy: principles of Thermal Collection and Storage	S.P. Sukhatme	Tata McGraw-Hill	1984




### Training Activities details for AY: 2020-21

S.N.	Name of the Training	Date of Conduction	By whom	Details
1	FUEL(Friends Union for Engineering Lives, India	07/08/2020	Future Skills Program	Final Year students
2	A National Level Webinar on Job Opportunities for Mechanical & Civil Engineering Students after Covid-19 in FEM	31/08/2020	Mr. Vijayavittthal Illal Director, CADVISION R&D, Bengaluru	Final Year Students
3	Placement Assistance Training (18 Days)	29/09/2020 to 17/10/2020	Seventh Sense Talent Solution, Bengaluru	Final Year Students
4	Microsoft Ai, Machine Learning & Data Science in association with NASSCOM through VTU CPC	19/10/2020 to 24/10/2020	NASSCOM through VTU CPC	Finale Year Students
5	Global Talent Track	07/01/2021	Mr. Nawnit Kumar University Alliance Manager, Global Talent Track	Final Year (2021 Batch) Students
6	Fly Weight (Product Building with Python Course)	02/02/2021	Mr.Shrijith, Software Engineering Researcher at University of California, Irvine as a Masters Degree Pursuant	2022 & 2023 Batch Students
7	Codenest Dream Factory Project	05/04/2021 (45 Days)	Aptitude, Technical Programming, PD & Resume Building	Final year Students
8	Face Prep Lounchpad	15/06/2021	A Free Placement Preparation Course	37 Final year Students
9	Career Labs by "BYJUS"	30/04/2021	A Talk on "Placement Opportunities in Various Domens"	All Final year Students
10	Great Learning	25/06/2021	Job Eligibility Test	78 Final year Students
11	VTUSupports Destination Technologies	30/07/2021	VTU CPC Supports the 'Career and Placement Program' 120+ Hours of Free Employability Training with Placement Assistance In Association with Destination Technologies	2021 Batch & 2022 Batch All Branch Students

  
**TRAINING & PLACEMENT OFFICER**  
**Hirasugar Institute of Technology**  
**Nidasoshi-591236, Dt.: Belgaum**

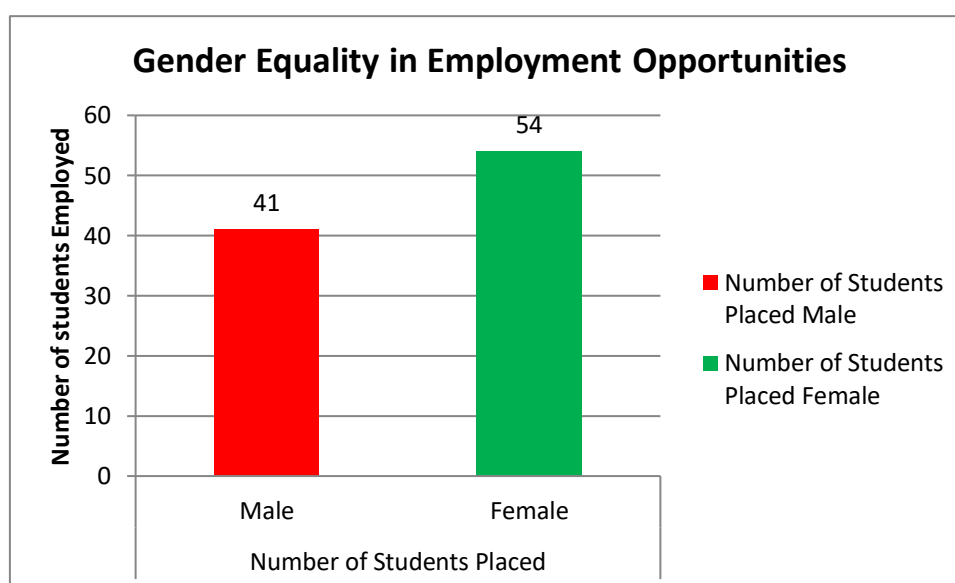


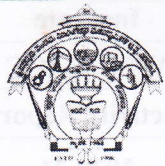
	S J P N Trust's		Institute
	<b>Hirasugar Institute of Technology, Nidasoshi.</b>		NAAC
	<i>Inculcating Values, Promoting Prosperity</i>		Gender Equality
	Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi. <b>Accredited at 'A' Grade by NAAC</b> <b>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME</b>		2020-21

## Gender Equality in Employment Opportunities

### Details of Employment

Year	Number of Students Employed	
	Male	Female
2020-21	41	54





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Institute

WEC &amp; ICC

Activity Report

2020-21

Type of Activity (cultural/curricular/co-curricular)	Co curricular
Date of Activity held	08-03-2021
Time	10.30 am to 1.00 pm
Professional Details of Chief Guest and Guest of Honor	<b>Chief Guest: Miss Anita Rathod PSI</b> Basav circle Police station Nippani <b>Guest of honor: Dr. Soumya Sajjan, MBBS, DGO.</b> Chief Medical officer, Community Health Center Ammanagi.
Year / Class	All girl's Students
No. of Students Attended	135
Activity In charge	Prof. S. S. Kamate

**Description of Activity:**

International Women's Day was celebrated in HSIT Nidasoshi on 08<sup>th</sup> March 2021 at 10.30am. The event was organized to give awareness regarding role of women in society to our students. The event was organized by Women's Empowerment, NSS and Antisexual Harassment (ICC) Cell HSIT Nidasoshi.

**Dr. Soumya Sajjan, MBBS, DGO.** Chief Medical officer, Community Health Center Ammanagi addressed the gathering and gave useful information in relation to health and hygiene. Madam even reminded the precautions to be taken during this COVID-19 situation. **Miss Anita Rathod PSI** Basav circle police station Nippani couldn't attend the function due to an emergency. We had a special invitee on this occasion **Mrs. Kempavva Harijan, Rajyostava awardee 2020**, for Bayalata category. The function started with invocation song followed by welcome and introduction of guests. Felicitation of guests was carried out by Principal and staff after their speech. President of the function Principal Dr. S. C. Kamate addressed the gathering and briefed the importance of woman in everyone life and different roles of women and her social responsibilities. The function was concluded by vote of thanks by Prof. Sujata Huddar. About 135 students and all staff members were present for the function.

The women's day was successful in conveying the Role of Women in Modern Society and is one of the informative co curricular activity by HSIT Nidasoshi.





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Institute

WEC & ICC

Activity Report

2020-21


## Event Photographs:



*S. S. Kamale*  
Convener

*K. S. 103*  
Principal



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	<i>Inculcating Values, Promoting Prosperity</i> Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi. Accredited at 'A' Grade by NAAC		Activity
	<u>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME.</u>		2020-21




**Activity:** Awareness on "COVID-19 RTPCR Test"

**Date:** 17/11/2020


**Place:** At College.



Principal Dr.S.C.Kamate is briefing to all the staff about necessary of RTPCR test to fight against COVID-19. The program was organized by NSS Unit.

  
 N.S.S. Programme Officer  
 Hirasugar Institute of Technology  
 NIDASOSHI-591236

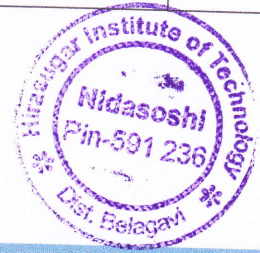


	S J P N Trust's		HSIT
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	<i>Inculcating Values, Promoting Prosperity</i> Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi. Accredited at 'A' Grade by NAAC		Activity
	<u>Programmes Accredited by NBA: CSE, ECE, EEE &amp; ME.</u>		2020-21


**Activity:** Awareness rally on Energy Conservation.

**Date:** 23/12/2020

**Place:** At Streets of Nidasoshi Village(Adapted)



NSS Unit in association with KREDL Organized awareness rally on energy Conservation to the public of Nidasoshi Village(Adapted) in this rally we displayed display cards showing energy conservation messages and shouted slogans on energy conservation.

  
 N.S.S. Programme Officer  
 Hirasugar Institute of Technology  
 NIDASOSHI, 591236






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HSIT  
NSS  
Activity  
2020-21

**Activity:** Celebration of Voters Day.  
**Date:** 25/01/2021  
**Place:** At College.



NSS Unit has organized a Voters Day Celebration Function to all staff and students of HSIT. On this occasion Principal **Dr.S.C.Kamate** narrated the celebration of this day and **Prof.R.R.Patil** NSS Program Officer detected the voter's day pledge to all the staff and Students.

  
N.S.S. Programme Officer  
Hirasugar Institute of Technology  
NIDASOSHI, 591236





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HSIT

NSS

Activity

2020-21



Activity: World Cancer Day

Date: 04/02/2021

Place: At College



NSS Unit has organized "World Cancer Day" program for Cancer Awareness to all the staff and students. Chief Guest of the Function **Dr. Smruti M. Haval**, Rukmini Multispecialty Hospital, Sankeshwar and Special Invitee **Mr. Amrnath B. Khot**, NCD Unit, Counsellor, Community Health Center, Ammanagi has briefed the different types of Cancer Diseases and how to prevent those.

*[Signature]*  
N.S.S. Programme Officer  
Hirasugar Institute of Technology,  
NIDASOSHI 591236