

DEPARTMENT OF MATALLURGICAL AND MATERIALS ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

| COURSE PLAN – PART I | | | |
|---|--|-----------------------|--|
| Course Title | Energy and Environmental Engineering | | |
| Course Code | ENIR11 | No. of Credits | 2 |
| Course Code of Pre-requisite subject(s) | Nil | | |
| Session | Jan 2018 | Section | |
| Name of Faculty | Sivachittrambalam V | Department | MME |
| Email | sivav@nitt.edu | Telephone No. | 9786778444 |
| Name of Course Coordinator(s) | Sivachittrambalam V | | |
| E-mail | sivav@nitt.edu | Telephone No. | |
| Course Type | General Institute Requirements | | |
| Syllabus (approved in BoS) | | | |
| It is mentioned in Course Teaching and Learning activities | | | |
| COURSE OBJECTIVES | | | |
| <ul style="list-style-type: none"> ○ To teach the principal renewable energy systems. ○ To explore the environmental impact of various energy sources and also the effects of different types of pollutants | | | |
| COURSE OUTCOMES (CO) | | | |
| Course Outcomes | | | Aligned Programme Outcomes (PO) |
| At the end of the course student will be introduced to the Principal renewable energy systems and explore the environmental impact of various energy sources and also the effects of different types of pollutants. | | | 1,4,5,6,7,8,10,11,12 |

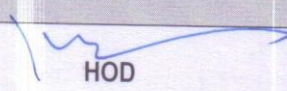
| COURSE PLAN – PART II |
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| COURSE OVERVIEW |
| <ul style="list-style-type: none"> • To develop interest among students regarding environment and its protection. • To provide basic understanding of environmental engineering so that the students may meet the expectation of the Industries for pollution control in their premises so as to comply with newer and tougher laws and acts that are being enforced in India and globally. • To introduce the principles and methods to control air, water and soil pollution to the undergraduate students of Metallurgical Engineering. |

To develop basic understanding of following topics:

- ✓ sources of water, air and land pollution
- ✓ recycle and reuse of waste, energy recovery and waste utilization
- ✓ air pollution and its measurement
- ✓ design of pollution abatement systems for particulate matter and gaseous constituents
- ✓ design of waste-water and industrial effluent treatment
- ✓ hazardous waste treatment and disposal
- ✓ solid-waste disposal and recovery of useful products

COURSE TEACHING AND LEARNING ACTIVITIES

| Sl.No | Week | Topics | Mode of Delivery |
|--------------|----------------------------|--|-------------------------|
| 1 | Jan 2 nd week | Introduction about course and its applications. | PPT/Chalk on Board |
| 2 | Jan 3 rd week | Present Energy resources in India and its sustainability, Energy Demand Scenario in India | PPT/Chalk on Board |
| 3 | Jan 4 th week | Different type of conventional Power Plant, Advantage and Disadvantage of conventional Power Plants-Conventional vs Non-conventional power generation | PPT/Chalk on Board |
| 4 | Feb 1 st week | Basics of Solar Energy- Solar Thermal Energy- Solar Photovoltaic- Advantages and Disadvantages- Environmental impacts and safety. | PPT/Chalk on Board |
| 5 | Feb 2 nd week | Power and energy from wind turbines- India's wind energy potential- Types of wind turbines- Off shore Wind energy- Environmental benefits and impacts. | PPT/Chalk on Board |
| 6 | Feb 3 rd week | Biomass resources-Biomass conversion Technologies- Feedstock pre-processing and treatment methods- Bioenergy program in India- Environmental benefits and impacts. | PPT/Chalk on Board |
| 7 | Feb 4 th week | Geothermal Energy resources –Ocean Thermal Energy Conversion – Tidal. | PPT/Chalk on Board |
| 8 | March 1 st week | Air pollution- Sources, effects, control, air quality standards, air pollution act, air pollution measurement. | PPT/Chalk on Board |
| 9 | March 2 nd week | Water pollution-Sources and impacts, | PPT/Chalk on Board |
| 10 | March 3 rd week | Soil pollution-Sources and impacts, disposal of solid waste. And Management. | PPT/Chalk on Board |
| 11 | March 4 th week | Noise pollution. | PPT/Chalk on Board |
| 12 | April 1 st week | Greenhouse gases – effect, acid rain. | PPT/Chalk on Board |
| 13 | April 2 nd week | Pollution aspects of various power plants. Fossil fuels and impacts, Industrial and transport emissions-impacts. | PPT/Chalk on Board |

| COURSE ASSESSMENT METHODS | | | | |
|---|---|---|----------|-------------|
| Sl.No | Mode of Assessment | Week/Date | Duration | % Weightage |
| 1 | Continous Assement Test I (Descriptive) | Feb 26 | 1 Hrs | 20% |
| 2 | Continous Assement Test II (Descriptive) | March 26 | 1 Hrs | 20% |
| 3 | Quiz/Objecctive Type Test | April First week | 15 Mins | 10% |
| 4 | End Semester | As per institute norms | 2 Hrs | 50% |
| CPA | 1. Students, those who missed asement I or II or both are eligible to give compensation test/retest at end of academc year before end semester exam and its weightage will be 20% only. 2. No provision for students who missing quiz/Objecctive type test 3. Supplementary exam will be conducted for those who missing end semester exam. | | | |
| COURSE EXIT SURVEY | | | | |
| Anonymous feedback will be collected from students through class representative at end of the semester. | | | | |
| COURSE POLICY | | | | |
| MODE OF CORRESPONDENCE (email/ phone etc) | | | | |
| Students can meet the faculty at any stage in the course duration in case he/she find difficulty in understanding the concept. Mobile: 9786778444 In cabin: MME annexure building 202 Email: sivav@nitt.edu ATTENDANCE : 75% mandatory COMPENSATION ASSESSMENT <ol style="list-style-type: none"> Students, those who missed asement I or II or both are eligible to give compensation test/retest at end of academc year before end semester exam and its weightage will be 20% only. No provision for students who missing quiz/Objecctive type test Supplementary exam will be conducted for those who missing end semester exam. ACADEMIC HONESTY & PLAGIARISM Students are expected to behave in ethical and honest manner at all stages throughtout the semester and their all relevant work related to academic should be without any plagiarism. | | | | |
| ADDITIONAL INFORMATION | | | | |
| Nil | | | | |
| FOR APPROVAL | | | | |
| Course Faculty Sivachittrambalam V <i>V. Sivachittrambalam</i> 12/01/18 | | CC-Chairperson <i>B. di 154</i> 12 JAN 2018 C.B. RAVISANKAR | | |
| | |  HOD | | |