

## NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

This course outline template acts as a guide for writing your course outline. As every course is different, please feel free to amend the template/ format to suit your requirements.

<b>COURSE OUTLINE TEMPLATE</b>			
<b>Course Title</b>	<b>ENERGY ENVIRONMENT AND BUILDINGS</b>		
<b>Course Code</b>	AR701	<b>No. of Credits</b>	2
<b>Department</b>	ARCHITECTURE	<b>Faculty</b>	PROF. G. SANGEETHA
<b>Pre-requisites Course Code</b>	NIL		
<b>Course Coordinator(s) (if, applicable)</b>	PROF. G. SANGEETHA		
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>	NIL	<b>Telephone No.</b>	2503565 9894058347
<b>Course Type</b>	<input type="checkbox"/> <b>Core course</b> <input type="checkbox"/> <b>Elective course</b>		
<b>COURSE OVERVIEW</b>			
<p>An overall insight into Energy Environment and Buildings: Understanding Indoor Environmental Concepts and its influence on Total Comfort. Understanding the total energy need for building and various factors that consume energy. Understanding the Energy conservation /efficiency codes and Regulations.</p>			
<b>COURSE OBJECTIVES</b>			
<p>To have an overall insight and understanding about Energy Environment, Buildings and their interdependency and relationship.</p>			
<b>COURSE OUTCOMES (CO)</b>			
<b>Course Outcomes</b>	<b>Aligned Programme Outcomes (PO)</b>		
<ol style="list-style-type: none"> <li>1. Understanding the need of Energy and its usage in buildings</li> <li>2. Understanding of Indoor environmental and Human comfort</li> <li>3. Understanding of the total energy requirement of buildings from start to end use.</li> <li>4. Understanding of energy policy, codes and regulations.</li> </ol>			
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>			
<b>S.No.</b>	<b>Week</b>	<b>Topic</b>	<b>Mode of Delivery</b>
1	Week 1 August	Nature and extent of the energy and environmental crises facing the world and the country.  <b>Introduction of Assignment 1 (A1)</b>	Lecture

2	Week 2 September	Need for implementing energy efficiency on an international, national and individual basis in the context of the building industry & environmental issues	Lecture
3	Week 3 September	<b>Guest Lecture:</b> Energy and Building Technology	Guest Lecture
4.	Week 4 September	Energy consuming sectors in the country. Primary, delivered and end – use energy.  <b>A1: Review of two journal papers</b>	Lecture/ Discussion/Presentation
5	Week 5 September	Concept of embodied energy. Embodied energy for material and building component. Energy for production of building materials. Total energy need for building	Lecture
6	Week 6 October	<b>Guest Lecture:</b> Energy and Building Technology  <b>Introduction of Assignment 2 (A2)</b> –Case Study of 2 Building types – Studying the Building Technology and assessing various factors that influence the energy performance of buildings.	Guest Lecture
7	Week 7 October	Indoor environment – spatial environment, Thermal environment, visual environment.  <b>Discussion on Assignment 2</b>	Lecture/Discussions
8	Week 8 October	<b>A 2 presentation</b>	Presentation
9	Week 9 October	<b>CA Test</b>	Written Examination
10	Week 10 November	Human comfort and its assessment. Factors influencing comfort in solar passive buildings  <b>Introduction of Assignment 3 (A3) - Term Paper</b>	Lecture
11	Week 11 November	<b>Guest Lecture :</b> Sustainable Indoor Environments	Guest Lecture
12	Week 12 November	Functional factors, environmental factors, envelope factors, air-conditioning systems factors,	Lecture

		energy source factors and electrical systems factors.	
13	Week 13 November	<b>A3 Term paper Presentation</b>	Seminar
14	Week 14 December	Energy conservation / efficiency codes and Regulations. Methods & Techniques of energy performance assessment of buildings	Lecture
15	Week 15 December	<b>Final Exam</b>	Written Examination

#### COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	CA Test	9 <sup>th</sup> week	60 minutes	20%
2.	<b>Assignment 1-</b> Journal paper Review	1 <sup>st</sup> week	2 weeks	5%
3.	<b>Assignment 2</b> – Case Study of 2 Building types – Studying the Building Technology contributing to energy efficiency	6 <sup>th</sup> week	2 weeks	15%
4.	<b>Assignment 3</b> -Term Paper – Topic 1 :Human comfort and Comfort Parameters  Topic 2: Methods & Techniques of energy performance assessment. (2,000 words - 4 pages single spaced, 8 pages double spaced)	10 <sup>th</sup> week	3 weeks	10%
5.	Semester Examination		180 minutes	50%

#### ESSENTIAL READINGS :

1. Baker Nick and Steemers Koen, “Energy and Environment in Architecture”, E & FN Spon, London, 1999.
2. Goulding, John, R., Lewis, Owen, J., and Steemers, Theo, C., “Energy in Architecture”, Bastford Ltd., London, 1986.

3. Bansal Narendra, K., Hauser Gerd and Minke Gernot, "Passive Buildings Design: A Hand book of Natural Climatic Control", Elsevier Science, Amsterdam, 1994.
4. Givoni, B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986.
5. Smith, R. J., Phillips, G. M., and Sweeney, M., "Environmental Science", Longman Scientific and Technical, Essex, England, 1982.
6. Watson Donald, "Climate Design: Energy Efficient Building principles and practices". McGraw Hill Book Company, New York, 1983.

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)**

1. Feedback form may be given to students to be filled in and collected back.

**COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)**

1. **Class will be of** lectures, guest lectures, site visits, case studies, seminars and discussions.
2. **Attendance:** A minimum of 75 % attendance percentage is required to be able to attend the end semester examination.
3. **Pass Marks:** A minimum of 40% of marks is required to pass the subject.
4. **Retest:** On a genuine case, if a student is absent for the continuous assessment test, he/she will be permitted to give a retest by providing the supporting documents of evidence for absence and it will be held in the second week of April before the final examination and the portion for which will be the portions taught till date of the Retest.
5. **Case study** will be of group work. Students are responsible to conduct the case study and every other aspect related to the case study.
6. **Meeting the faculty:** Any student can meet the course faculty in case of any query or difficulty faced pertaining to the subject, during the office hours with a prior appointment fixed.

**ADDITIONAL COURSE INFORMATION**

NIL

**FOR SENATE'S CONSIDERATION**

NIL

Course Faculty 

CC-Chairperson



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