

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outline Template			
Course Title	Basics of Mechanical Engineering		
Course Code	MEIR 11	No. of credits	2
Department	Civil Engineering I Sem - Sec (B)	Faculty	Dr.K.R Balasubramanian
Pre-requisites Course Code	Nil		
E-mail ID	krbala@nitt.edu	Telephone No.	94435 61873
Course Type	Core Course		
Course Overview			
<p>The Basics of Mechanical Engineering is an essential subject taught to the first year engineering students of almost all branches. The objective of this course is to familiarise the students with the scope of mechanical engineering and the core concepts. In the developing industrial world, engineers of various branches put their hands together to develop new technologies. It is evident from the development of automobiles, robotics, micro electro mechanical systems, refrigeration and air conditioning, rapid prototyping, automation, biomechatronics, 3D printing, renewable energy conversion, smart materials, nanotechnology, fuel cells, green building technology etc. This course involves the basic understanding of the mechanical engineering concepts. The student will be familiarised with laws of thermodynamics, engines, automobiles, Refrigeration and Air conditioning, turbines, machine elements, engineering materials and various manufacturing processes.</p>			
Course Objectives			
<ul style="list-style-type: none">• To understand the various concepts in laws of thermodynamics and its application.• To impart knowledge on the basic concepts of Internal and external combustion engines, automobiles, steam and gas turbines, turbo machines and Refrigeration and Air-conditioning.• To provide knowledge on the various manufacturing process.• To impart knowledge of engineering materials, its properties and applications.			

Course Outcomes (CO)			
Course Outcomes		Aligned Programme Outcomes(PO)	
On completing this course students will be able to,			
1. Apply thermodynamic concepts related to their field of application		1,2,3	
2. Understand the working principles of internal and external combustion engines, automobiles, steam and gas turbines, turbo machines and Refrigeration and Air-Conditioning.		1,2,3	
3. To select the suitable material based on its properties for the specific applications.		1,2,3	
4. To identify the suitable machining and joining process for specific applications.		1,2,3,6	
Course Teaching and Learning Activities			
S.No	Week	Topic	Mode of Delivery
1.	1 st Week	Introduction to mechanical engineering, concepts of thermal engineering, mechanical machine design, industrial engineering, and manufacturing technology.	Chalk and talk and Power point presentation
2.	2 nd week	Laws of thermodynamics, types of system.	Chalk and talk and Power point presentation
3.	3 rd week	Concepts and types of I.C. engine	Chalk and talk and Power point presentation
4.	4 th week	Air compressors, principle of turbomachines.	Chalk and talk and Power point presentation
5.	5 th week	Properties of steam and steam generators, automobile engineering	Chalk and talk and Power point presentation
6.	6 th week	Introduction to gas turbines and refrigeration & airconditioning.	Chalk and talk and Power point presentation
7.	7 th week	Types of materials, selection of materials, material properties.	Chalk and talk and Power point presentation

8.	8 th week	Introduction to materials structure, machine elements.	Chalk and talk and Power point presentation
9.	9 th week	Transmission, fasteners, and support systems.	Chalk and talk and Power point presentation
10.	10 th week	Manufacturing, classification, lathe, drilling machines, milling machines,	Chalk and talk and Power point presentation
11.	11 th week	Metal joining, metal forming, casting, forging, Introduction to powder metallurgy	Chalk and talk and Power point presentation
12.	12 th week	End Semester Examination	

Course Assessment Methods

S.No	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Cycle test 1	After 5 th week	1 hour	20
2.	Cycle test 2	After 10 th week	1 hour	20
3.	Assignment	After 4 th and 9 th week	-	5
4.	Attendance & Participation in class	---	-	5
5.	End Semester Exam	-	3 hours	50

Essential Readings: Textbooks, reference books, etc.

- Lecture notes prepared by Department of Mechanical Engineering, NITT,
- Venugopal, K, Basic Mechanical Engineering, Anuradha Agencies, Chennai
- Shanmugam, G, Palanichamy, M, S, Basics Civil and Mechanical Engineering, Tata McGraw Hill Publishing Co., New Delhi

Course Exit Survey (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

1. Students can meet the faculty at any stage in the course duration in case he/she finds difficulty in understanding the concept.
2. Feedback form issued to students to express their comments during mid of the semester and after completing the syllabus. Students are requested to give genuine feedback about the course.
3. Student knowledge about the topic covered in this course will be judged based on marks obtained in the written examinations and during surprise test.

Course Policy (including plagiarism, academic honesty, attendance, etc.)

1. Examination:

- Students must attend all the examinations (cycle tests, surprise test and end semester examination). If a student fails to attend any of the cycle test due to genuine reason he/she will be permitted to write re-test and the portion will be the combined portion of cycle test 1 and 2.
- Students should submit assignments as per the instructions given in the class. Late submission is not permitted.

2. Attendance:

- The minimum attendance for appearing for the semester examination is 75%.
- Those students, whose attendance falls below 75% but above 50% in the course, shall attend mandatory classes before the semester examinations to qualify to write semester exam.
- The students who are having attendance less than 50% has to redo the course in the next semester or academic year (at the time of offering the course).
- The Institute follows relative grading with flexibility given to teachers to decide the mark ranges for grades. The assessment of the course will be done on the basis of marks.

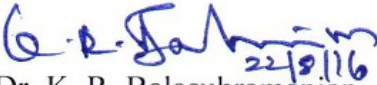
3. Correspondence

- All the correspondence (schedule of classes/schedule of assessment course material/ any other information regarding this course) will be done through their class representative.

Additional Course Information

Students can reach course faculty by fixing appointment through
E-mail (krbala@nitt.edu) or phone (9443561873)

For Senate's Consideration


Dr. K. R. Balasubramanian
(Course Faculty)


CC-Chairperson


Head of the Department