DEPARTMENT OF MECHANICAL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	B. Tech / Computer Science Engineering		
Course Title	BASICS OF MECHANICAL ENGINEERING		
Course Code	MEIR11	**No. of Credits**	2
Course Code of Pre-requisite subject(s)	-		
Session	July - 2022	**Section**	A
Name of Faculty	Mr. X. Michel Myures	**Department**	Mechanical Engineering
Email	411119051@nitt.edu	**Telephone No.**	
Name of Course Coordinator(s) (if, applicable)	**Dr. S. Suresh (Mentor)**		
E-mail	ssuresh@nitt.edu	**Telephone No.**	
Course Type	☐ **Core course** ☐ **Elective course** ☑ **GIR Course**		

Syllabus (approved in BoS)

Introduction to Mechanical Engineering, Thermal Engineering, Design, manufacturing Engineering

IC Engines–2 Stroke and 4 stroke systems in IC Engines. Automobiles -Transmission systems, Suspension system, E-Vehicles

Energy Systems - Power plants, Types, Gas Turbines, Steam Turbines, Utility boilers, R & A/C system-Green Energy production and Devices

Engineering materials, Machine elements, Transmission, Fasteners, Support systems.

Manufacturing, Classification, Metal forming, Casting, Lathe, Drilling machines, Milling machines, Metal joining.

REFERENCE BOOKS:

1. *Basant Agarwal and C.M. Agarwal, Basic Mechanical Engineering, Wiley India Pvt. Ltd., 2008.*
2. *Sadhu Singh, Basic Mechanical Engineering, S. Chand & Company Limited, 2009.*
3. *P.K. Nag, Karthikeya Tripathi, C.S. Pawar, Basic Mechanical Engineering, Tata McGraw Hill Publishing Company, 2009.*
4. *Lecture notes prepared by Department of Mechanical Engineering, NITT, 2018.*

COURSE OBJECTIVES

- To introduce and define the basics concept of mechanical engineering.
- To familiarize the working principles of IC engines and automobile systems.
- To enable the students to understand the details about the energy systems and its components.
- To demonstrate the various machine elements, materials and its function.
- To help the students acquire knowledge about the various manufacturing process.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
At the end of the course student will be able to	
1. To identify the basic concept and fundamentals of mechanical engineering.	1,2,3,6,7,10,11,12
2. To understand the working principle of IC engines and Energy systems.	1,2,3,6,7,10,11,12
3. To appreciate the process and materials involved in the manufacture of various machine element components.	1,2,3,6,7,10,11,12

COURSE PLAN – PART II

COURSE OVERVIEW

Basic Mechanical Engineering covers the creation, design, and analysis of many types of systems, technologies, and materials. This course will introduce students to the fundamentals of Mechanical Engineering, It is evident from the diverse needs of mankind shows the importance of interdisciplinary knowledge, furthermore with that knowledge engineers develop new technologies.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1.	1st Week	Introduction to Mechanical Engineering, Thermal Engineering.	Chalk & Talk
2.	2nd Week	Introduction to Design Engineering, Manufacturing Engineering.	Chalk & Talk
3.	3rd Week	IC Engines – 2 Stroke and 4 stroke systems in IC Engines.	PPT Presentations / Chalk & Talk
4.	4th Week	Automobiles -Transmission systems, Suspension system, E-Vehicles.	PPT Presentations / Chalk & Talk

5.	5th Week	Energy Systems - Power plants, Types, Gas Turbines.	PPT Presentations / Chalk & Talk
6.	6th Week	Steam Turbines, Utility boilers.	PPT Presentations / Chalk & Talk
7.	7th Week	R & A/C system-Green Energy production and Devices.	PPT Presentations / Chalk & Talk
8.	8th Week	Introduction to Engineering design, Engineering materials, Machine elements.	PPT Presentations / Chalk & Talk
9.	9th Week	Transmission, Fasteners, Support systems.	PPT Presentations / Chalk & Talk
10.	10th Week	Introduction to Production Engineering-Manufacturing, Classification, Casting, Metal joining.	PPT Presentations / Chalk & Talk
11.	11th Week	Metal forming, Lathe.	PPT Presentations / Chalk & Talk
12.	12th Week	Drilling machines, Milling machines.	PPT Presentations / Chalk & Talk

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Cycle test 1	5th Week	90 minutes	20%
2	Cycle test 2	9th Week	90 minutes	20%
3.	Quiz (Multiple Choice Questions)	11th Week	20 minutes	10%
4.	Assignments / Surprise Test	Continuous assessment	-	10%
5.	End Semester	As per Institute schedule	180 minutes	40%

COURSE EXIT SURVEY

- Student's feedback in the class after every 4 weeks and through class committee meetings.
- Feedback from students on the course outcomes shall be obtained at the end of the course.

COURSE POLICY

MODE OF CORRESPONDENCE (email/ phone etc)

- All the communication (schedule of assessment/ course material/any other information regarding this course) will be intimated through the class representative.
- The Faculty is available for consultation after contact hours with prior appointment through Phone: 9791320989 (or) email: 411119051@nitt.edu

COMPENSATION ASSESSMENT POLICY

- Attending all the assessments (1, 2, 3, 4, 5) are mandatory for every student. Flexibility is given to the students to fix the date for each mode of evaluation convenient to majority of the students.
- If any student fails to attend the cycle test 1 and 2 due to genuine reason like medical emergency, the student may be permitted to appear for the compensation assessment (CPA) on submission of appropriate documents as proof. (Not valid for students having attendance lag).
- Students not having 75 % minimum attendance at the end of the semester and also didn't attend cycle test 1 and 2 will be awarded 'V' Grade and have to REDO the course.
- In any case, compensation assessment (CPA) is not considered as an improvement test.
- The minimum marks for passing this course and grading pattern will adhere to the regulations of the institute.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- All the students are expected to attend all the contact hours. Students should maintain 75% minimum physical attendance by the end of the course to attend the end semester examination.
- Absence due to medical reason and institutional activities will be considered when the student falls below 75% of physical attendance and it should be supported by a letter (in professional letterhead) from the concerned authorities. Any preparatory works in view of institution activities should not be taken up in class contact hours.
- Students not having 75% minimum attendance at the end of the semester will be awarded 'V' Grade and have to REDO the course.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

FOR APPROVAL

Mr. X. Michel Myures (RS/ME) Course Faculty	Dr. S. Suresh (Prof/ME) Course Mentor	CC - Chairperson 7/12/20	HOD (CSE)

Guidelines:

a) The number of assessments for a course shall range from 4 to 6.

b) Every course shall have a final assessment on the entire syllabus with at least 30% weightage.

c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered. Details of compensation assessment to be specified by faculty.

d) The passing minimum shall be as per the regulations.

e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.

g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.