



**SSR ENGINEERING COLLEGE**

Approved by AICTE, New Delhi | Affiliated to JNTUH | Accredited by NAAC 'A' Grade

Ananthasagar (V), Hasanparthy (M), WARANGAL - 506 371

( An Autonomous Institution )



## **LESSON PLANS**

***II B.Tech.  
(Mechanical Engineering)  
Instruction Schedule***

***II Semester: 05-12-2016 to 20-05-2017***

## **VISION AND MISSION OF THE INSTITUTE**

### **VISION:**

To be among the Top 50 Engineering Institutions in India by 2020.

### **MISSION:**

- ❖ Design and implement flexible curriculum that equips graduates with professional and life skills.
- ❖ Promote high quality collaborative research that strengthens the intellectual capital of the nation.
- ❖ Fore industry and professional body alliances to accomplish technology transfer and meet societal needs.
- ❖ Prepare graduates with entrepreneurial skills to establish and expand future enterprises.

## **VISION AND MISSION OF THE DEPARTMENT**

### **VISION:**

To achieve excellence in teaching, research and consultancy.

### **MISSION:**

- ❖ Deliver a comprehensive, industry responsive curriculum and prepare students as prospective leaders in industry, business and academia.
- ❖ Develop linkages with world class research organizations and educational institutions in India and abroad for excellence in teaching, research and consultancy practices.
- ❖ Build a strong technical workforce that would bridge the gap between industry requirements and academic orientation.
- ❖ Provide an intellectual environment and educational experience from which students and faculty contribute to society.
- ❖ Induce entrepreneurial skills among students for contributing to the economic development of the nation.

## **PROGRAM EDUCATIONAL OBJECTIVES**

- I. To inculcate necessary aptitude and ability to pursue higher education at master's and doctoral level in order to expand and fulfill the needs of higher education and to meet the needs of the industry.
- II. To acquire thorough knowledge of mathematical and physical sciences and to be in a position either independently or collectively to interpret, analyze, formulate and solve Mechanical Engineering problems.
- III. To be adequately equipped through classroom instruction and laboratory experiments to visualize and tackle any engineering problem requiring professional expertise of mechanical engineer like design, modeling, simulation and development of a product from concept to prototype.
- IV. To build teamwork skills and ability to communicate and deal with people in different professional, ethical, social and economical contexts.
- V. To create the requisite academic ambience that nurtures the student ability to cope up with situations that emerges in the professional context with confidence through lifelong learning.

## **PROGRAM OUTCOMES**

- a. An ability to apply knowledge of mathematics, science and engineering.
- b. An ability to design and conduct experiments, as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs with in realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d. An ability to function on multidisciplinary teams.
- e. An ability to identify, formulate and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## **FOREWARD**

The **LESSON PLANS** are prepared and distributed to the students to help them maintain proper time schedules, attend classes regularly for better understanding of the course and to face the examinations with confidence. The lesson plans also help students to be up-to-date by keeping track of the syllabus covered. Students should attend classes regularly for continuity and prepare their own study notes for every course.

**P R I N C I P A L**

**Academic Calendar for the Academic Year 2016-17**

**B. Tech. I Semester**

S. No.	Description	Schedule	Duration
1	<b>Commencement of Class work</b>	<b>13.06.2016</b>	--
2	1 <sup>st</sup> Spell of Instruction	13.06.2016 to 06.08.2016	8 Weeks
3	1 <sup>st</sup> Mid Examinations <i>Timings: FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm</i>	08.08.2016 to 10.08.2016	3 Days
4	2 <sup>nd</sup> Spell of Instruction	11.08.2016 to 04.10.2016	8 Weeks
5	Dasara Holidays	05.10.2016 to 12.10.2016	1 Week
6	2 <sup>nd</sup> Mid Examinations <i>Timings: FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm</i>	13.10.2016 to 15.10.2016	3 Days
7	End Semester Regular Examinations/Internal Improvement/Supplementary Examinations (Theory & Practical)	17.10.2016 to 03.12.2016	7 Weeks
8	Commencement of Class work for <b>II, III, IV B.Tech. II Sem.</b> for the academic year 2016-2017	<b>05.12.2016</b>	--

**B. Tech. II Semester**

S. No.	Description	Schedule	Duration
1	<b>Commencement of Class work</b>	<b>05.12.2016</b>	--
2	1 <sup>st</sup> Spell of Instruction	05.12.2016 to 28.01.2017	8 Weeks
3	1 <sup>st</sup> Mid Examinations <i>Timings: FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm</i>	30.01.2017 to 01.02.2017	3 Days
4	2 <sup>nd</sup> Spell of Instruction	02.02.2017 to 28.03.2017	8 Weeks
5	2 <sup>nd</sup> Mid Examinations <i>Timings: FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm</i>	30.03.2017 to 01.04.2017	3 Days
6	End Semester Regular Examinations/Internal Improvement/Supplementary Examinations (Theory & Practical)	03.04.2017 to 20.05.2017	7 Weeks
7	Commencement of Class work for <b>II, III, IV B.Tech. I Sem.</b> for the academic year 2017-2018	<b>12.06.2017</b>	--

**MECHANICAL ENGINEERING  
(RA15) COURSE STRUCTURE:: B. TECH.**

II Year I Semester									
S.No.	Course Code	Course	Hours/Week				Marks		
			L	T	P/D	C	CIE	SEE	Total
1	HS104	Economics and Finance for Engineers	3	-	-	3	30	70	100
2	BS106	Environmental Studies	3	-	-	3	50	50	100
3	BS109	Advanced Mathematics	3	-	-	3	30	70	100
4	ES118	Thermodynamics	4	-	-	4	30	70	100
5	ES119	Mechanics of Solids	3	1	-	3	30	70	100
6	ME101	Metallurgy and Material Science	4	-	-	4	30	70	100
7	ME105	Mechanics of Solids and Metallurgy Lab	-	-	3	2	30	70	100
8	ME106	Technical Sketching and Computer Aided Modelling	-	-	3	2	30	70	100
<b>Total</b>						<b>24</b>	<b>260</b>	<b>540</b>	<b>800</b>
9	MC101	Business Communication and Public Speaking	1	-	1	2	50	50	100

II Year II Semester									
S.No.	Course Code	Course	Hours/Week				Marks		
			L	T	P/D	C	CIE	SEE	Total
1	HS105	Engineering Ethics	2	-	-	2	30	70	100
2	BS110	Probability and Statistics	3	-	-	3	30	70	100
3	ES112	Foundations to Product Design	3	-	-	3	50	50	100
4	ME102	Applied Thermodynamics	4	1	-	4	30	70	100
5	ME103	Production Technology	4	-	-	4	30	70	100
6	ME104	Theory of Machines	4	1	-	4	30	70	100
7	ME107	Applied Thermodynamics Lab	-	-	3	2	30	70	100
8	ME108	Production Technology Lab	-	-	3	2	30	70	100
<b>Total</b>						<b>24</b>	<b>260</b>	<b>540</b>	<b>800</b>
9	MC102	Gender Sensitization	-	-	3	2	30	70	100

**(HS105) ENGINEERING ETHICS****COURSE OBJECTIVES:**

Students will be able to

1. Instill the moral values that ought to guide their profession.
2. Resolve the moral issues in the profession.
3. Infer moral judgment concerning the profession.
4. Correlate the concepts in addressing the ethical dilemmas.
5. Judge a global issue by presenting an optimum solution.

**COURSE OUTCOMES:**

At the end of the course, the students will develop ability to

1. Distinguish between ethical and non ethical situations.
2. Practice moral judgment in conditions of dilemma.
3. Relate the code of ethics to social experimentation.
4. Develop concepts based on moral issues and enquiry.
5. Resolve moral responsibilities in complications.
6. Defend one's views in supporting the moral concerns.
7. Apply risk and safety measures in various engineering fields.
8. Develop cognitive skills in solving social problems.

**LESSON PLAN**

**Name of the Faculty : Mr. B.Satish Kumar**

**Academic Year : 2016 - 2017**

**Course Number : HS105**

**Course Name: Engineering Ethics**

**Program : B.Tech**

**Branch : ME**

**Year / Semester : II/II**

S. No.	Topic	Schedule Date(s)
<b>UNIT-I</b>		
1.	Scope for Ethics in Engineering, human values, Morals and Ethics along with Examples.	17/12/2016
2.	Integrity work ethic, Service Learning, Civic Virtue, Respect for others with examples.	17/12/2016
3.	Living peacefully, caring, sharing, honesty courage and valuing time	24/12/2016
4.	Empathy, Self Confidence and Character	24/12/2016
5.	Spirituality, Engineering as social Experimentation, Engineers as responsible experimenters	31/12/2017
6.	The code of ethics for engineers, Various NSPE guidelines, Fundamental principles	31/12/2017
<b>UNIT-II</b>		
7.	Engineering Ethics - variety of moral issues	07/1/2017
8.	Deontology, Consequentialism, Utilitarian, Virtue Theory	07/1/2017
9.	Kohlberg's Theory - Gilligan's Theory- Consensus and Controversy	21/01/2017

10.	Models of Professional Roles - uses of ethical theories.	21/01/2017
11.	Valuing Time – Co-operation – Commitment-Case study about above theories.	21/01/2017
12.	<b>UNIT-III</b> Safety and Risk –Road, Rail	28/01/2017
13.	Electric, fire – Assessment of Safety and Risk	28/01/2017
14.	<b>I- Mid Examination</b>	30 Jan-1 <sup>st</sup> Feb,2017
15.	The Government Regulator's Approach to Risk	04/02/2017
16.	Case Studies on recent issues related to safety.	04/02/2017
17.	<b>UNIT-IV</b> Collegiality and Loyalty	18/02/2017
18.	Respect for authority ,collective bargaining	18/02/2017
19.	Confidentiality, Conflicts of interest, occupational crime	25/02/2017
20.	Rights of Engineer's - Professional Rights	25/02/2017
21.	Employee Rights – Whistle blowing,	04/03/2017
22.	Intellectual Property Rights (IPR) – Plagiarism.	04/03/2017
23.	<b>UNIT-V</b> Multinational Corporations – Business Ethics	18/03/2017
24.	- Environmental Ethics – Computer Ethics	18/03/2017
25.	Weapons Development, Role of Engineer as Manager	18/03/2017
26.	Expert Witnesses and Advisors - Case Studies .	25/03/2017
27.	Seminars	25/03/2017
28.	Revisions of all units	25/03/2017
29	<b>II- Mid Examination</b>	30 <sup>th</sup> March-1 <sup>st</sup> April,2017

**Time Table:**

Monday	:	-	Thursday	:	-
Tuesday	:	-	Friday	:	-
Wednesday	:	-	Saturday	:	11.20AM-1.00PM



**(BS110) PROBABILITY AND STATISTICS****COURSE OBJECTIVES:**

Students will be able to

1. Enumerate and explain the conditional probability by using Baye's Theorem.
2. Apply the probability distributions, random variables to different engineering problems.
3. Construct and formulate the testing of hypothesis for small & large samples by using different distribution Tests.
4. Test the hypothesis for several sample proportions (small & large) by using  $X^2$  -test.
5. Apply the different statistical methods in estimating the rank correlation (Linear) and regressions for practical problems.

**COURSE OUTCOMES:**

At the end of the course, the students will develop ability to

1. Define various events, probability Axioms & rules.
2. Solve the practical problems of engineering using Baye's theorem.
3. Apply the binomial, poisson & normal distribution concepts to solve different practical problems.
4. Construct the null & alternate hypothesis for different samples using sampling distribution of means.
5. Solve different sample problems by using t, f &  $x^2$ -tests.
6. Test the hypothesis of different samples, using critical region.
7. Evaluate the testing of hypothesis for different samples (small & large) by using estimation of means & proportions.
8. Calculate the different rank correlation coefficients for simple linear regressions between two variables by using different correlation tests.

**LESSON PLAN**

**Name of the Faculty :**

**Course Number :** BS110

**Program :** B.Tech.

**Year/Semester :** II / II

**Academic Year:** 2016 - 2017

**Course Name :** P & S

**Branch :** Mechanical

**Section :** -

S. No.	Topic	Scheduled Date
<b>UNIT-I</b> <b>Probability</b>		
1	Introduction to probability	05/12/2016
2	Sample space and events and definition of Probability	06/12/2016 08/12/2016
3	The axioms of probability and Elementary theorems	09/12/2016 13/12/2016
4	Problems on Probability	15/12/2016
5	Conditional probability	16/12/2016
6	Theorem on total probability	17/12/2016
7	Baye's theorem and Applications (problems)	19/12/2016 20/12/2016
<b>UNIT-II</b> <b>Random Variables and Probability Distributions</b>		

8	Discrete and continuous Random Variables	22/12/2016
9	Discrete and continuous Probability distributions	23/12/2016
10	Problems	24/12/2016 29/12/2016 30/12/2016
11	Binomial Distribution and Problems	31/12/2016 02/01/2017 03/01/2017
12	Poisson Distribution and Problems	05/01/2017 06/01/2017 07/01/2017
13	Normal distribution and Problems	09/01/2017 10/01/2017 11/01/2017
<b>UNIT-III</b>		
<b>Sampling Distribution and Testing of Hypothesis-I</b>		
14	Sampling distribution- Populations and samples	16/01/2017 17/01/2017
15	Sampling distributions of means (known and unknown)	19/01/2017 20/01/2017
16	Sampling distributions of proportions	21/01/2017 23/01/2017
17	Sampling distributions of sums and differences	24/01/2017 27/01/2017 28/01/2017
<b>I - Mid Examination</b>		<b>30/01/2017</b> <b>to</b> <b>01/02/2017</b>
18	Procedure of testing of Hypothesis – Null Hypothesis – Alternative Hypothesis – Type1 & Type2 errors – One tailed and two tailed tests – Critical Region	02/02/2017
19	Testing of Hypothesis concerning Means	03/02/2017
20	Hypothesis concerning one mean – small & large samples - problems	04/02/2017
21	Hypothesis concerning two means – small & large samples - problems	06/02/2017 07/02/2017 09/02/2017
22	Paired Sample t-test	10/02/2017
<b>UNIT-IV</b>		
<b>Testing of Hypothesis-II and Estimation</b>		
23	Testing of Hypothesis concerning Proportions	13/02/2017
24	Hypothesis concerning one proportion – small & large samples - problems	14/02/2017
25	Hypothesis concerning Two proportions - problems	16/02/2017 17/02/2017 18/02/2017
26	Hypothesis concerning several proportions - problems	20/02/2017
27	Goodness of Fit-test	21/02/2017 23/02/2017
27	Introduction –Estimation	25/02/2017

		27/02/2017
28	Point estimation	28/02/2017 02/03/2017
29	interval estimation	03/03/2017 04/03/2017
30	Estimation of Means & Proportions	06/03/2017
<b>UNIT-V</b> <b>Correlation and Regression</b>		
31	Definitions- Correlation - Correlation coefficient	07//03/2017
31	Karl Pearson's coefficient of Correlation	09//03/2017 10//03/2017
32	Spearman's Rank correlation coefficient	13//03/2017 14//03/2017
33	Definition-Regression	16//03/2017
34	Regression by method of least squares	17//03/2017
35	Regression equation of X on Y	18//03/2017 20//03/2017
36	Regression equation of Y on X	21//03/2017 23//03/2017
37	Revision	25//03/2017 27//03/2017 28/03/2017
<b>II - Mid Examination</b>		<b>30/03/2017</b> <b>to</b> <b>01/04/2017</b>

**Time Table:**

Monday	:		Thursday	:	
Tuesday	:		Friday	:	
Wednesday	:		Saturday	:	

**(ES112) FOUNDATIONS TO PRODUCT DESIGN****COURSE OBJECTIVES:**

Students will be able to:

1. Describe the design process
2. Discuss the various stages to be carried out in the process of design
3. Identify the product need, and extend towards the development by functional decomposition
4. Predict, Judge, Estimate the needs in design process.
5. Summarize and present a report justifying the cost estimate in the process.

**COURSE OUTCOMES:**

At the end of the course the students will develop an ability to:

1. Describe the Design process.
2. Discriminate the various stages for a proper design.
3. Identify the necessary steps in design by functional decomposition.
4. Devise various steps and perform value analysis
5. Develop the art of communication to various audience.
6. Compose the related work and make presentation.
7. Prepare cost estimate and planning in developing a product.
8. Summarize and present a report with the knowledge of rights and ethics.

**LESSON PLAN**

**Name of the Faculty :**

**Academic Year:** 2016 - 2017

**Course Number :** ES112

**Course Name:** FPD

**Program :** B.Tech

**Branch :** Mechanical Engineering

**Year / Semester :** II B.Tech II Sem.

**Section:** --

S.No.	Topic	Schedule Week	Completion Date
1.	Overview of Introduction to Engineering and discussion on their projects and Introduction to Foundation to Product Design.	I WEEK	
2.	Design process – seven stages.	II WEEK	
3.	Sketching	III WEEK	
4.	Ethnography	IV WEEK	
5.	Functional decomposition – Kano model	V WEEK	
6.	Six hats method	VI WEEK	
7.	Product development with project planning and estimation	VII to X WEEK	
8.	Intellectual Property Rights patents	XI WEEK	
9.	Report writing	XII WEEK	

**Time Table:**

Monday	:	-	Thursday	:	-
Tuesday	:	01:40pm to 04:00pm	Friday	:	-
Wednesday	:	-	Saturday	:	-

**(ME102) APPLIED THERMODYNAMICS****COURSE OBJECTIVES:**

Students will be able to

1. Categorize various stages of combustion in IC engines.
2. Evaluate the performance of IC engines.
3. Illustrate various types of compressors.
4. Compare various types of steam turbines and their performance parameters.
5. Discuss the cycle of gas turbine plant, merits and demerits.

**COURSE OUTCOMES:**

At the end of the course students will develop ability to

1. Sketch valve and port timing diagrams of any IC engine.
2. Distinguish between normal and abnormal combustion in IC engines.
3. Recommend a suitable instrument for testing the performance of IC engines.
4. Evaluate the effect of various operating variables on engine performance.
5. Estimate the performance of different types of compressors.
6. Memorize the working of Rankine cycle & the effect of superheating, reheating and regeneration.
7. Calculate the power developed, axial thrust, diagram efficiency, condition for maximum efficiency and velocity diagram of an impulse & reaction turbines.
8. Compute the performance parameters of gas turbines of various cycles and their efficiency improving methods.

**LESSON PLAN**

**Name of the Faculty:** N.Praveena devi

**Academic Year:** 2016- 2017

**Course Number** : ME102

**Course Name:** ATD

**Program** : B.Tech

**Branch:** ME

**Year / Semester** : II / II

**Section:**

S.No.	Topic	Schedule Date
1.	<b>UNIT - I:</b> I.C.engines: Classification.	06/12/2016
2.	working principles	07/12/2016
3.	Valve and port timing diagrams.	08/12/2016
4.	Combustion In S.I. Engines: Stages of combustion	09/12/2016
5.	Normal combustion and abnormal combustion	10/12/2016
6.	Importance of flame speed and effect of engine variables	13/12/2016
7.	Types of abnormal combustion	14/12/2016
8.	Fuel requirements and fuel rating	15/12/2016
9.	Combustion in C.I. Engines: Four stages of combustion	16/12/2016

10.	Delay period and its importance	17/12/2016
11.	Effect of engine variables	20/12/2016
12.	Diesel knock	21/12/2016
13.	fuel requirements and fuel rating	22/12/2016
14.	<b>UNIT – II: Testing and Performance: Parameters of performance</b>	23/12/2016
15.	measurement of cylinder pressure	24/12/2016
16.	fuel consumption, air intake, exhaust gas composition	27/12/2016
17.	Brake power	28/12/2016
18.	Determination of friction losses and indicated power	29/12/2016
19.	Problems	30/12/2016
20.	Problems	31/12/2016
21.	Problems	03/01/2017
22.	Performance test – Heat balance sheet and chart.	04/01/2017
23.	Problems	05/01/2017
24.	Problems	06/01/2017
25.	Problems	07/01/2017
26.	<b>UNIT – III: Compressors: Classification</b>	10/01/2017
27.	Reciprocating compressor - Principle of operation	11/01/2017
28.	work required, Isothermal efficiency	12/01/2017
29.	volumetric efficiency and effect of clearance	17/01/2017
30.	stage compression	18/01/2017
31.	Problems	19/01/2017
32.	Problems	20/01/2017
33.	undercooling, saving of work	21/01/2017
34.	minimum work condition for stage compression	24/01/2017
35.	Problems	25/01/2017
36.	Problems	27/01/2017
37.	Problems	28/01/2017
<b>I-Mid Examination</b>		31/01/2017

38.	Centrifugal compressor - principle of operation	02/02/2017
39.	velocity and pressure variation	03/02/2017
40.	Axial Flow Compressors: principle of operation	04/02/2017
41.	Degree of reaction – isentropic efficiency.	07/02/2017
42.	<b>UNIT - IV: Basic Concepts: Rankine Cycle – schematic layout</b>	08/02/2017
43.	Thermodynamic analysis	09/02/2017
44.	concept of mean temperature of heat addition	10/02/2017
45.	Methods to improve cycle performance – Regeneration & reheating	14/02/2017
46.	Problems	15/02/2017
47.	Problems	16/02/2017
48.	Steam Turbines: Classification	17/02/2017
49.	Impulse Turbines: Mechanical details	18/02/2017
50.	Velocity diagram	21/02/2017
51.	power developed, axial thrust, and blade or diagram efficiency	22/02/2017
52.	condition for maximum efficiency	23/02/2017
53.	Problems	25/02/2017
54.	Problems	28/02/2017
55.	De-Laval Turbine	01/03/2017
56.	Methods to reduce rotor speed.	02/03/2017
57.	<b>UNIT – V: Reaction Turbines: Mechanical details</b>	03/03/2017
58.	principle of operation	04/03/2017
59.	thermodynamic analysis of a stage, degree of reaction	07/03/2017
60.	velocity diagram	08/03/2017
61.	Parson's reaction turbine	09/03/2017
62.	condition for maximum efficiency	10/03/2017
63.	Problems	14/03/2017
64.	Problems	15/03/2017
65.	Problems	16/03/2017

66.	Gas Turbines: Simple gas turbine plant	17/03/2017
67.	Ideal cycle	18/03/2017
68.	essential components	21/03/2017
69.	parameters of performance	22/03/2017
70.	regeneration, inter cooling and reheating	23/03/2017
71.	closed and semi- closed cycles – merits and demerits	24/03/2017
72.	Problems	25/03/2017
73.	Problems	28/03/2017
<b>II-Mid Examination</b>		31/03/2017

**TIME TABLE:**

Monday	:	-	Thursday	:	09:30 AM -10:20 AM
Tuesday	:	10:20 AM -11:10 AM	Friday	:	12:10 PM - 01:00 PM
Wednesday	:	11:20 AM - 12:10 PM	Saturday	:	10:20 AM - 11:10 AM



**(ME103) PRODUCTION TECHNOLOGY****COURSE OBJECTIVES:**

The students will be able to

1. Describe the principles of casting, welding processes.
2. Discuss the various metal forming processes.
3. Analyze the process of plastics.
4. Categorize the functions of Inert gas welding, metal inert gas welding.
5. Evaluate welding technologies like, friction welding, Induction welding.

**COURSE OUTCOMES:**

At the end of the course students will develop ability to

1. Design pattern and pattern allowances for making casting.
2. Compute gating ratios and riser location.
3. Perform the resistance welding process for joining thin sheets.
4. Develop soldering techniques for joining electronic circuits.
5. Evaluate destructive and non-destructive testing of welds.
6. Assess the process of extrusion for producing intricate parts.
7. Create new process for making components with hard plastics
8. Construction of cupola furnace for melting practice.

**LESSON PLAN**

**Name of the Faculty :** Dr. P. Sammaiah

**Academic Year:** 2016 - 17

**Course Number :** ME103

**Course Name:** Production Technology

**Program :** B.Tech

**Branch :** Mechanical Engineering

**Year / Semester :** II B.Tech II Sem.

**Section:** --

S.No.	Topic	Schedule Date	Completion Date
<b>UNIT - I: Casting</b>			
10.	Steps involved in making a casting	06/12/2016	
11.	Advantage of casting and its applications	06/12/2016	
12.	Patterns and pattern making	07/12/2016	
13.	Types of patterns	09/12/2016	
14.	Materials used for patterns, pattern allowances and their construction,	13/12/2016	
15.	Principles of Gating, Gating ratio	14/12/2016	
16.	Design of Gating system	16/12/2016	
17.	Solving problems on Gating Design	16/12/2016	
<b>UNIT - II: Solidification of Casting</b>			
18.	Concept – Solidification of pure metal and alloys,	20/12/2016	
19.	Short and long freezing range alloys.	20/12/2016	
20.	Risers – Types, function and design, casting design considerations	21/12/2016	
21.	Special casting design considerations,	23/12/2016	
22.	Special casting processes - Centrifugal casting	23/12/2016	
23.	Die casting, Investment casting.	27/12/2016	
24.	<b>Methods of Melting</b> - Crucible melting	28/12/2016	
25.	Cupola operation,	30/12/2016	

26.	Steel making processes, special.	03/01/2017	
<b>UNIT - III: A) Welding:</b>			
27.	Classification of welding process	06/01/2017	
28.	Types of welds and welded joints and their characteristics,	10/01/2017	
29.	Design of welded joints,	11/01/2017	
30.	Gas welding, ARC welding,	17/01/2017	
31.	Forge welding, resistance welding,	18/01/2017	
32.	Thermit welding	20/01/2017	
33.	Plasma (Air and water) welding.	24/01/2017	
34.	Discuss on previous question papers	25/01/2017	
35.	Discuss on previous question papers	27/01/2017	
<b>I-Mid Examination</b>		<b>30/01/2017 to 01/02/2017</b>	
36.	<b>B) Cutting of Metals:</b> Introduction	03/02/2017	
37.	Oxy – Acetylene Gas cutting, water plasma.	03/02/2017	
38.	Cutting of ferrous, non-ferrous metals.	07/02/2017	
39.	<b>Inert Gas Welding:</b> TIG & MIG welding,	07/02/2017	
40.	Friction welding, Induction welding,	08/02/2017	
41.	Explosive welding, Laser welding,	10/02/2017	
42.	Soldering & Brazing.	10/02/2017	
43.	Heat affected zones in welding;	14/02/2017	
44.	Welding defects - causes and remedies	14/02/2017	
45.	Destructive and Non-Destructive testing of welds.	15/02/2017	
<b>UNIT - IV: Hot working, cold working, strain hardening,</b>			
46.	Recovery, recrystallization	17/02/2017	
47.	Grain growth,	21/02/2017	
48.	Comparison of properties of Cold and Hot worked parts,	21/02/2017	
49.	Rolling mills and products.	22/02/2017	
50.	<b>Stamping, forming and other cold working process:</b>	28/02/2017	
51.	Blanking and piercing	28/02/2017	
52.	Bending and forming	01/03/2017	
53.	Drawing and its types - wire drawing and tube drawing	01/03/2017	
54.	Coining, hot and cold spinning	03/03/2017	
55.	Types of presses and press tools.	03/03/2017	
56.	Forces and power requirement in the above operations.	07/03/2017	
57.	Discussion of previous question papers	07/03/2017	
<b>UNIT - V: Extrusion of Metals: Basic extrusion process and its characteristics</b>			
58.	Hot extrusion and cold extrusion	08/03/2017	
59.	Forward extrusion and backward extrusion	10/03/2017	
60.	Impact extrusion, Hydrostatic extrusion.	10/03/2017	
61.	<b>Forging Processes:</b> Principles of forging	14/03/2017	
62.	Tools and dies	04/03/2017	
63.	Types forging	15/03/2017	
64.	Smith forging, Drop forging – Roll forging	17/03/2017	
65.	Forging hammers: Rotary forging – forging defects.	17/03/2017	
66.	<b>Processing of Plastics: Introduction</b>	21/03/2017	
67.	Types of plastics, properties,	22/03/2017	

68.	Applications and their processing methods	24/03/2017	
69.	Equipment (blow & injection moulding).	28/03/2017	
70.	Revision	28/03/2017	
71.	Revision	03/03/2017	
72.	Revision	03/03/2017	
<b>II-Mid Examination</b>		<b>30/03/2017 to 01/04/2017</b>	

**TIME TABLE:**

Monday	:		Thursday	:	
Tuesday	:		Friday	:	
Wednesday	:		Saturday	:	

**(ME104) THEORY OF MACHINES****COURSE OBJECTIVES:**

Students will be able to

1. Define concept of machines, mechanisms and related terminologies. And analyses of a mechanisms for displacement, velocity and acceleration at any point in a moving link
2. Analyze the motion of the elements and velocity and acceleration of various points on the links. theory of gears, gear trains
3. Evaluate the method of static force analysis and dynamic force analysis of mechanisms.
4. Draw turning moment diagram of fly wheel, crank rotation and crank effort .Discuss about types of gears and gear trains.
5. List different types of governors and balancing of masses , solving the problems using analytical and graphical method

**COURSE OUTCOMES:**

At the end of the course, the students will develop an ability to

1. Study of elements of links, classifications of links and types of motion.
2. Distinguish the different mechanisms and their inversions.
3. Design four bar and slider crank mechanisms to determine the required motion and graphical representation of velocity and acceleration.
4. Summarize the static and dynamic force analysis and compute the energy stored in the fly wheel.
5. Explain different types of gears and gear trains.
6. Evaluate the no teeth required on the pinion and gear for to avoid interference.
7. Compare different types of governors and asses them.
8. Analyze unbalanced forces and couples

**LESSON PLAN**

**Name of the Faculty:** V.DEVENDER

**Academic Year:** 2016 - 17

**Course Number** : ME104

**Course Name:** Theory of Machines

**Program** : B.Tech

**Branch** : Mechanical engineering

**Year / Semester** : II / II

**Section:** -

S.No.	Topic of the Lecture	Schedule Date DD/MM/YYYY
1	<b>UNIT - I : Mechanisms:</b> Elements or Links – Classification	05-12-2016
2	Rigid Link, flexible and fluid link	07-12-2016
3	Types of kinematics pairs – sliding, turning, rolling, screw and spherical pairs	08-12-2016
4	closed and open pairs – constrained motion. – completely, partially or successfully constrained and incompletely constrained	09-12-2016
5	<b>Machines:</b> Mechanism and machines — inversions of quadric cycle, chain – single and double slider crank chains.	14-12-2016
6	Classification of machines, kinematic chain ,Inversion of	15-12-2016

	mechanism	
7	inversions of quadric cycle,.	17-12-2016
8	Inversions of single slider crank chain.	18-12-2016
9	Inversions of double slider crank chain	19-12-2016
10	<b>UNIT-II Kinematics: Plane motion of body - Instantaneous center of rotation</b>	21-12-2016
11	relative motion between two bodies – Three centers in line velocity and acceleration of slider, ,	22-12-2016
12	Graphical determination of instantaneous centre, diagrams for simple mechanisms and determination of angular velocity of points and links	23-12-2016
13	Velocity and acceleration – Motion of link in machine	24-12-2016
14	Determination of velocity and acceleration diagrams – Graphical method	28-12-2016
15	Application of relative velocity method for four bar chain.	29-12-2016
16	<b>Analysis of Mechanisms:</b> Analysis of slider crank chain for displacement,	30-01-2017
17	Acceleration diagram for a given mechanism	31-01-2017
18	<b>Coriolis acceleration</b>	02-01-2017
19	determination of Coriolis's component of acceleration.	04-01-2017
20	Problems	05-01-2017
21	Problems	06-01-2017
22	Freudentein's equation	07-01-2017
23	Problems	09-01-2017
24	<b>UNIT-III Static and Dynamic force analysis of planar Mechanisms</b>	11-01-2017
25	Introduction	12-01-2017
26	Free body diagrams	16-01-2017
27	Conditions for equilibrium	18-01-2017
28	Two,three and four Force members.	19-01-2017
29	Inertia forces, D'Alembert's principle	20-01-2017
30	Problems	21-01-2017
31	Problems	23-01-2017
41	<b>Turning moment diagram</b> , Turning moment and fly wheels	25-01-2017
42	Turning moment, Inertia, torque, connecting rod angular velocity and acceleration.	27-01-2017
43	Crank effort and torque diagrams.	28-01-2017
44	Fluctuation of energy. problems	29-01-2017
45	Mid Exam	30-01-2017

46	Mid Exam	31-01-2017
47	Mid Exam	01-02-2017
48	Fly wheels and their design, problems	02-02-2017
49	<b>UNIT-IV Higher pairs, friction wheels and toothed gears:</b> Types – Law of gearing, – expressions for arc of contact and path of contact.	03-02-2017
50	condition for constant velocity ratio for transmission of motion,	04-02-2017
51	form of teeth; cycloidal and involute profiles, velocity of sliding	06-02-2017
52	Phenomena of interferences – Methods of interference.	08-02-2017
53	Condition for minimum member of teeth to avoid interference,	09-02-2017
54	<b>Gear Trains:</b> Introduction – Train value – Types –	10-02-2017
52	Simple and reverted wheel train – Epicyclic gear Train	13-02-2017
53	Methods of finding train value or velocity ratio –	15-02-2017
54	.Epicyclic gear trains.	16-02-2017
55	Problems	17-02-2017
56	Problems	18-02-2017
57	Selection of gear box – Differential gear for an automobile.	20-02-2017
58	Problems	22-02-2017
59	Governors:- Watt governor. Porter governor	23-02-2017
60	Problem	25-02-2017
61	Problem	27-02-2017
62	Proell governor - problems.	01-03-2017
63	Spring loaded governors - Hartnell.	02-03-2017
64	Problem	03-03-2017
65	Problem	04-03-2017
66	Hartung with auxiliary springs.	06-03-2017
67	Sensitiveness, isochronous, hunting.	08-03-2017
68	Problems	09-03-2017
69	Problems	10-03-2017
70	<b>UNIT-V Balancing :-</b> Balancing of rotating masses.	13-03-2017
71	Balancing of single, multiple rotating masses.	15-03-2017
72	Problems, single and different planes.	16-03-2017
73	Problems on balancing.	17-03-2017
74	Balancing of reciprocating masses.	18-03-2017
75	Primary, secondary balancing of reciprocating masses.	20-03-2017

76	Analytical method, graphical method.	22-03-2017
77	Unbalanced force and couples.	23-03-2017
78	Balancing of "V" Engines.	24-03-2017
79	Multi cylinder inline and radial engines.	25-03-2017
80	Locomotive balancing.	27-03-2017

**TIME TABLE:**

MONDAY	:	9.30	THURSDAY	:	10.20
TUESDAY	:		FRIDAY	:	11.10
WEDNESDAY	:	12.10	SATURDAY	:	1.40

**(ME107) APPLIED THERMODYNAMICS LAB****COURSE OBJECTIVES:**

Students will be able to

1. Explain the working principle of an IC engine.
2. Test on the engines to determine the performance parameters like Brake thermal efficiency, Brake specific fuel consumption and Mechanical efficiency.
3. Estimate useful amount of heat energy and also various heat losses in the engine.
4. Calculate the performance parameters of different engines like Petrol, Diesel, 4-stroke, Single cylinder and Multi cylinder engines.
5. Summarize various loads to be applied on the engines, like electric, mechanical and hydraulic loading.

**COURSE OUTCOMES:**

At the end of the course students will develop an ability to

1. Identify various types of engines and their parts.
2. Sketch valve and port timing diagrams of any IC engine.
3. Calculate the performance parameters of 4 stroke engines.
4. Estimate energy distribution by conducting heat balance test on IC engines
5. Evaluate the engine fictional power.
6. Compare the efficiencies of 4 stroke and 2 stroke engines.
7. Calculate the economical speed of a 4 stroke engine.
8. Compute the performance of a compressor unit.

**LESSON PLAN**

**Name of the Faculty:** N.Praveena devi

**Academic Year:** 2016 - 2017

**Course Number** : ME107

**Course Name:** Applied Thermodynamics Lab

**Program** : B.Tech

**Branch:** ME

**Year / Semester** : II/II

Sl.No	Experiment	Date
1	I.C. Engines Valve / Port Timing Diagrams.	08/12/2016
2	I.C. Engines Performance Test (4 – Stroke Diesel Engine).	15/12/2016
3	I.C. Engines Performance Test on 2-stroke petrol Engine.	22/12/2016
4	Evaluation of engine friction by conducting Morse test on 4-stroke Multi cylinder Petrol Engine.	29/12/2016
5	Evaluate of engine friction by conducting motoring / retardation test on 4-stroke diesel engine.	05/01/2017



6	Heat balance on IC engines.	12/01/2017
<b>Internal lab test-I</b>		19/01/2017
7	Determination of A/F Ratio and Volumetric Efficiency on IC engines.	02/02/2017
8	Determine of economical speed test for fixed load on 4-stroke engine.	09/02/2017
9	Performance test on variable compression ratio engine.	16/02/2017
10	Dis-assembly / Assembly of engines.	23/02/2017
11	Performance test on reciprocating Air-compressor unit.	02/03/2017
12	Study of Boilers.	09/03/2017
13	Revision of Experiments	16/03/2017
<b>Internal lab test-II</b>		23/03/2017

**(ME108) PRODUCTION TECHNOLOGY LAB****COURSE OBJECTIVES:**

The students will be able to:

1. Know of principles, capabilities, limitations, and productivity of manufacturing processes.
2. Describe the experimental skills of various production processes.
3. Learn the concept and applications of casting and welding process.
4. Identify the different types of forming processes.
5. Analyze the welding basics and concept of various types of welding.

**COURSE OUTCOMES:**

At the end of course, the students should be able to:

1. Know the tools, equipment and principle of operation of primary and secondary manufacturing.
2. Create various types of patterns.
3. Evaluate pouring, solidification time, riser and gating system for a given casting.
4. Apply the working principle of Arc, TIG and Spot welding to join the similar or dissimilar metals.
5. Know the defects, causes and their remedies of casting, welding and metal forming operations.
6. Evaluate the concept of forming processes for designing of a die.
7. Processing of plastics by using injection molding and blow molding machines.
8. Analyze the different manufacturing process and their use in industry for component production.

**LESSON PLAN**

**Name of the Faculty:** Dr.P.Sammaiah/Dr.A.Devaraju

**Academic Year:** 2016 - 17

**Course Number** : ME108

**Course Name:** PT LAB

**Program** : B.Tech

**Branch:** ME

**Year / Semester** : II / II

**Section:** --

S.No.	Topic	Schedule Date	
		Batch –I	Batch – II
*	Introduction to Manufacturing Laboratory - I	05-12-2016	08-12-2016
<b>CYCLE I</b>			
1.	ARC welding Lap & Butt Joint – 2 Exercises.	19-12-2016	15-12-2016
2.	TIG welding – 1 Exercise	02-01-2017	22-01-2016
3.	Spot Welding – 1 Exercise.	09-01-2017	05-01-2017
4.	Brazing Process – 1 Exercise	16-01-2017	12-01-2017

5.	Blanking & Piercing operation – 2 Exercise	23-01-2017	19-01-2017
6.	Hydraulic Press – 1 Exercise	06-02-2017	02-02-2017
<b>I - Internal Lab Exam</b>		13-02-2017	09-02-2017
<b>CYCLE II</b>			
1.	Preparation of Pattern – Dumble - 1 Exercise	20-02-2017	13-02-2017
2.	Preparation of Pattern – Bracket - 1 Exercise	27-02-2017	16-02-2017
3.	Moulding Melting and Casting - 1 Exercise	06-03-2017	02-03-2017
4.	Sand properties testing – 1 Exercise	13-03-2017	09-03-2017
5.	Injection Moulding	20-03-2017	16-03-2017
6.	Blow Moulding	27-03-2017	23-03-2017
7.	Plasma Welding/Cutting (Demo)	27-03-2017	30-03-2017
<b>II - Internal Lab Exam</b>		03-04-2017	03-04-2017