SR ENGINEERING COLLEGE

Innovation | Creativity | Entrepreneurship

LESSON PLANS

III B.Tech.
(Mechanical Engineering)
Instruction Schedule

I Semester: 12-06-2017 to 11-10-2017

VISION AND MISSION OF THE INSTITUTE

VISION:

- To be among the Top 20 Private Engineering Institutes in India by 2020

MISSION:

- Design and implement curriculum that equips students with professional and life skills.
- Recruit, develop and retain outstanding faculty to achieve academic excellence
- Promote and undertake quality research in thrust areas of science and Technology
- Collaborate with industry and academia to meet the changing needs of society
- Foster innovation and cultivate the spirit of entrepreneurship among students

VISION AND MISSION OF THE DEPARTMENT

VISION:

- To create outstanding mechanical engineers who are innovative and entrepreneurial

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
- Induce entrepreneurial skills among students for contributing to the economic development of the nation

PROGRAM EDUCATIONAL OBJECTIVES

Within a few years of earning the degree in mechanical engineering, graduates are expected to achieve one or more of the following program educational objectives:

I. Provide students with a sound foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, solve, and analyze engineering problems.

II. Develop successful careers as mechanical engineers; demonstrate professional engineering competence via positions of increasing responsibility.

III. Prepare graduates to pursue higher education in engineering or other professional fields and/or pursue entrepreneurial endeavors.

IV. Participate in research and development, consultancy and other innovative efforts in science, engineering and technology.

V. Build a strong technical workforce to address social, technical and business challenges through collaboration with industry and academia

Program Outcomes and Program Specific Outcomes

Program Outcome (PO) 1: **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

Program Outcome (PO) 2: **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Program Outcome (PO) 3: **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

Program Outcome (PO) 4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Program Outcome (PO) 5**: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

Program Outcome (PO) 6**: The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Program Outcome (PO) 7: **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Program Outcome (PO) 8: **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Program Outcome (PO) 9: **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Program Outcome (PO) 10: **Communication:** Communicate effectively on complex engineering activities with the engineering community and with t h e society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

Program Outcome (PO) 11: **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Program Outcome (PO) 12: **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Outcome (PO) 13: **Program Specific Outcome:** Function effectively in Industry or as entrepreneurs to solve inter disciplinary problems.

Program Outcome (PO) 14: **Program Specific Outcome**: Demonstrate knowledge and understanding of thermal, structural and manufacturing streams of Mechanical Engineering.

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

SR ENGINEERING COLLEGE

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Academic Calendar for the Academic Year 2017-18

I Semester

S. No.	Description	Schedule	Duration
1	**Commencement of Class work**	**12.06.2017**	--
2	1st Spell of Instruction	12.06.2017 to 05.08.2017	8 Weeks
3	1st Mid Examinations *Timings:* FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm	08.08.2017 to 10.08.2017	3 Days
4	2nd Spell of Instruction (Includes Dasara Holidays)	11.08.2017 to 11.10.2017	9 Weeks
6	2nd Mid Examinations *Timings:* FN: 10.00 am to 11.30 am **:** AN:2.00 pm to 3.30 pm	12.10.2017 to 16.10.2017	3 Days
7	End Semester Regular Examinations / Supplementary Examinations (Theory & Practical)	17.10.2017 to 02.12.2017	7 Weeks
8	Commencement of Class work for **II, III, IV B.Tech. II Sem**. for the academic year 2016-2017	**04.12.2017**	--

II Semester

S. No.	Description	Schedule	Duration
1	**Commencement of Class work**	**04.12.2017**	--
2	1st Spell of Instruction	04.12.2017 to 27.01.2018	8 Weeks
3	1st Mid Examinations *Timings:* FN: 10.00 am to 11.30 am : AN:2.00 pm to 3.30 pm	29.01.2018 to 31.01.2018	3 Days
4	2nd Spell of Instruction	01.02.2018 to 28.03.2018	8 Weeks
5	2nd Mid Examinations *Timings:* FN: 10.00 am to 11.30 am **:** AN:2.00 pm to 3.30 pm	29.03.2018 to 31.03.2018	3 Days
6	End Semester Regular Examinations / Supplementary Examinations (Theory & Practical)	02.04.2018 to 19.05.2018	7 Weeks
7	Commencement of Class work for **II, III, IV B.Tech.** **I Sem**. for the academic year 2018-2019	**11.06.2018**	--

COURSE STRUCTURE:: B-TECH-
(MECHANICAL ENGINEERING)

III Year I Semester									
S.No.	**Course Code**	**Course**	**Hours/Week**				**Marks**		
			L	**T**	**P/D**	**C**	**CIE**	**SEE**	**Total**
1	OE	***Open Elective***	3	-	-	3	30	70	100
2	HS106	Technical Writing	2	-	-	2	30	70	100
3	ES113	Mechatronics	4	-	-	4	30	70	100
4	ME109	Mechanics of Fluids and Hydraulic Machines	3	-	-	3	30	70	100
5	ME110	Design of Machine Members-I	3	1	-	3	30	70	100
6	ME111	Operations Research	3	-	-	3	30	70	100
7	ES114	Mechatronics Lab	-	-	3	2	30	70	100
8	ME119	Mechanics of Fluids and Hydraulic Machines Lab	-	-	3	2	30	70	100
9	ME121	Media Project	-	-	-	2	100	-	100
Total						**24**	**340**	**560**	**900**

III Year II Semester									
S.No.	**Course Code**	**Course**	**Hours/Week**				**Marks**		
			L	**T**	**P/D**	**C**	**CIE**	**SEE**	**Total**
1	OE	***Open Elective***	3	-	-	3	30	70	100
2	CS104	Object Oriented Programming Concepts through Java	3	-	-	3	30	70	100
3	ME112	Design of Machine Members-II	3	1	-	3	30	70	100
4	ME113	Machine Tools and Metrology	4	-	-	4	30	70	100
5	ME114	Finite Element Methods	4	1	-	4	30	70	100
6	ME115 ME116 ME117 ME118	***Professional Elective – 1*** 1. Welding Technology 2. Engineering Smart materials 3. Advanced Thermodynamics 4. Advanced Mechanics of solids	3	-	-	3	30	70	100
7	CS109	Object Oriented Programming Concepts through Java Lab	-	-	3	2	30	70	100
8	ME120	Machine Tools and Metrology Lab	-	-	3	2	30	70	100
Total						**24**	**240**	**560**	**800**

(HS106) TECHNICAL WRITING

COURSE OBJECTIVES:

Students will be able to

1. Recall basics of communication and correspondence methods.
2. Paraphrase the technical writing process.
3. Distinguish and the various types of correspondence techniques.
4. Prioritize the importance of various presentation techniques.
5. Construct professional documents as per the requirement of forthcoming technology.

COURSE OUTCOMES:

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

1. Recognize the importance of professional documents.
2. Paraphrase an idea and construct a standard document.
3. Distinguish the various structures of drafting professional documents.
4. Develop techniques of drafting various documents as per the needs of industry.
5. Construct the documents according to the industrial needs.
6. Evaluate the significance of inter personal and intrapersonal communication.
7. Design various reports as per the requirement.
   Design professional documents according to the situation.

LESSON PLAN

Name of the Faculty : N. CH. A. SREEKIRAN **Academic Year:** 2017 - 2018
Course Number : HS106 **Course Name :** TW
Program : B.Tech. **Branch :** ME
Year/Semester : III / I

S. No.	Topic	Scheduled Date
	UNIT- I **Introduction to Communication and Correspondence**	
1	Basics of Communication, Types of Communication	15/06/2017
2	Barriers to Communication	15/06/2017
3	Overview of Technical Writing Process, Stages of Technical Writing	16/06/2017
4	Effective Writing-Paraphrasing	22/06/2017
5	Practice Session	22/06/2017
6	Note Making-Note Taking	29/06/2017
7	Practice Session	30/06/2017
	UNIT –II **Drafting Professional Documents-I**	
8	Introduction, Basics of Professional Documents Office Correspondence	06/07/2017
9	Letters-Types- Styles	06/07/2017
10	Drafting Official	07/07/2017
11	Practice Session	13/07/2017
12	Business Letters	13/07/2017
13	Business Letters (Continued)	14/07/2017
14	Practice Session	20/07/2017
	UNIT –III	

Drafting Professional Documents-II		
15	Introduction- Drafting Notice-Circular	21/07/2017
16	Practice Session	27/07/2017
17	Agenda	27/07/2017
18	Minutes of Meeting	28/07/2017
19	Practice Session	03/08/2017
20	Practice Session	03/08/2017
21	Memo	04/08/2017
	I- Mid Examination	
22	Practice Session	11/08/2017
23	Emails	17/08/2017
24	Proposals (Basics)	17/08/2017
25	Contrast between Resume Building Resume- and Curriculum Vitae	18/08/2017
26	Building Resume- and Curriculum Vitae	24/08/2017
27	Building Resume- and Curriculum Vitae (Continued)	24/09/2017
28	Practice Session	31/08/2017
UNIT- IV Report writing and Research Papers: Introduction		
29	Types	01/09/2017
30	Drafting Technical Reports	07/09/2017
31	Business Reports	07/09/2017
32	Practice Session	08/09/2017
33	Project Reports	14/09/2017
34	Overview of Research Papers- Dissertations	14/09/2017
35	Drafting Techniques	15/09/2017
36	Practice Session	21/09/2017
UNIT- V Business Presentation and Interpersonal Communication		
37	Introduction- Defining situation- -Opening and closing thoughts	22/09/2017
38	Designing Presentation-Use of Visual Aids	26/09/2017
39	Introduction and Importance of Techniques in Interpersonal Communication	26/09/2017
40	Communication techniques in Professional life	05/10/2017
41	Public Speaking Techniques	05/10/2017
42	Practice Session	06/10/2017
	II - Mid Examination	

Time Table:

Monday	:	-	Thursday	:	5,6
Tuesday	:	-	Friday	:	6
Wednesday	:	-	Saturday	:	-

(ES113) MECHATRONICS

LESSON PLAN

Name of the Faculty : A. RAJESHWAR RAO **Academic Year:** 2017 - 18
Course Code : ES113 **Course Name** :MECHATRONICS
Program : B.Tech **Branch** : ME
Year/Semester : III / I

S. No.	Topic	Scheduled Date
	UNIT- I	
	INTRODUCTION	
1	Introduction to Mechatronics	12/06/2017
2	Key elements of Mechatronics	14/06/2017
3	Microprocessor fundamentals	15/06/2017
4	Microcontroller fundamentals	16/06/2017
5	Comparison of microprocessors and microcontrollers	17/06/2017
6	Introduction to Arduino board	19/06/2017
7	ATmega2560 Microcontroller	21/06/2017
8	Pin map of arduino board	22/06/2017
9	Procedural programming	23/06/2017
10	Embedded programming	24/06/2017
11	Embedded programming	28/06/2017
12	Simple programs on Bit manipulation	29/06/2017
13	Simple programs on Bit manipulation	30/07/2017
	UNIT- II	
	SENSORS	
14	Introduction, Classification of sensors	01/07/2017
15	Static characteristics of sensors	03/07/2017
16	Dynamic characteristics	05/07/2017
17	Selection of Sensors	06/07/2017
18	Displacement sensor	07/07/2017
19	Displacement sensor	12/07/2017
20	Displacement sensor	13/07/2017
21	Force sensor, Strain Gauge sensor	14/07/2017
22	Temperature sensor	15/07/2017
23	Temperature sensor	17/07/2017
24	Photo Sensors	19/07/2017
25	Photo Sensors	20/07/2017
26	Digital Sensors : Proximity sensor	21/07/2017
27	Proximity sensor	22/07/2017

28	Applications of Sensors	24/07/2017
	UNIT- III	
	ACTUATORS	
29	Mechanical Drives – Introduction	26/07/2017
30	Gears	27/07/2017
31	Belts	28/07/2017
32	Chain Drives	29/07/2017
33	Bearings	31/07/2017
34	**Electrical Actuation systems – Introduction**	02/08/2017
35	Relays	03/08/2017
36	Solid State Switches – Diodes	04/08/2017
	I- Internal Examination	08^{th} to 10^{th} August, 2017
37	Transistors	16/08/2017
38	MOSFET	17/08/2017
39	Thyristors and Triacs	18/08/2017
40	Solenoids	19/08/2017
41	Fundamentals of DC Motors	21/08/2017
42	Fundamentals of AC Motors	23/08/2017
43	Fundamentals of Stepper Motor	24/08/2017
	UNIT- IV	
	SIGNAL PROCESSING AND CONDITIONING	
44	Introduction to Signal Processing and conditioning	26/08/2017
45	Rectifiers	28/08/2017
46	Filters, Regulators	30/08/2017
47	Introduction to Operational Amplifier (OP Amp)	31/08/2017
48	Amplifying signals using Operational Amplifier	01/09/2017
49	Fundamentals of ADC	04/09/2017
50	Fundamentals of DAC	06/09/2017
51	Comparator	07/09/2017
	UNIT- V	
	POWER AND SPEED CONTROL	
52	Working of SCR	08/09/2017
53	Power Control of DC Motor using SCR	11/09/2017
54	Power Control of AC Motor using SCR	13/09/2017
55	Power Control of AC Motor using Triac	14/09/2017
56	Fundamentals of Pulse Width Modulation Technique	15/09/2017
57	Speed Control of DC Motor using PWM technique	16/09/2017
58	Speed Control of DC Motor using PWM technique	18/09/2017

59	Stepper Motor control	21/09/2017
60	Excitation Stepper Motor control	22/09/2017
	Revision	03/10/2017 to 11/10/2017
	II- Internal Examination	12^{th} to 16^{th} October, 2017

Time Table:

Monday	**:**	10:20 to11:10AM	**Thursday**	**:**	12:10 to 01:00 PM
Tuesday	**:**		**Friday**	**:**	01:40 to02:30 PM
Wednesday	:	9:30 to 10:20 AM	**Saturday**	**:**	01:40 to02:30 PM

(ME109) MECHANICS OF FLUIDS AND HYDRAULIC MACHINES

COURSE OBJECTIVES:

Students will be able to

1. Discuss the fundamental properties of fluid and calculate fluid pressure using the manometer.
2. Apply the differential conservation equations of mass, momentum, and energy to fluid flow problems.
3. Evaluate major and minor losses in pipes and also discuss boundary layer concept.
4. Classify the different types of turbines & evaluate work done and efficiency.
5. Discuss the Classification and working principles of pumps and evaluate the performance of hydraulic machines.

COURSE OUTCOMES:

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

1. Identify different fluid properties and the basic principle of fluid machinery when fluid is at rest and motion.
2. Illustrate the types of flow and solve the problems based on continuity equation.
3. Analyze fluid flow problems with the application of the momentum and energy equation.
4. Distinguish between major & minor losses in pipes.
5. Sketch the velocity diagram at inlet & outlet for vanes.
6. Explain different types of turbines & evaluate work done and efficiency.
7. Evaluate the performance of hydraulic machines.
8. Discuss the Classification and working principle of pumps.

LESSON PLAN

Name of the Faculty : SANJEEV KUMAR **Academic Year:** 2017 - 18
Course Number : ME109 **Course Name :** MF&HM
Program : B-Tech **Branch :** ME
Year / Semester : III / I **Section :**

S.No.	Topic	Schedule Date
	UNIT - I	
1.	Dimensions and units	13/06/17
2.	Physical properties of fluids – specific gravity, viscosity	13/06/17
3.	Physical properties of fluids – specific gravity, viscosity	15/06/17
4.	Surface tension & vapour pressure and their influence on fluid motion	15/06/17
5.	Surface tension & vapour pressure and their influence on fluid motion	17/06/17
6.	Atmospheric, gauge and vacuum pressure	20/06/17
7.	Measurement of pressure - piezometer	20/06/17
8.	U-tube and differential manometer	24/06/17
9.	U-tube and differential manometer	24/06/17

10.	Problem practice	29/06/17
11.	Problem practice	29/06/17
	UNIT - II	
12.	Fluid kinematics: Stream line, path line, sreak lines & stream tube	01/07/17
13.	Classification of flows – steady and unsteady, uniform and non uniform, laminar and turbulent	04/07/17
14.	Rotational and irrotational flow, equation of continuity	04/07/17
15.	Equation of continuity for 1-D & 3-D flows, surface and body forces	06/07/17
16.	Euler's and Bernoulli's equation for flow along a stream line, momentum equation and its application on pipe bend	06/07/17
17.	Momentum equation and its application on pipe bend	11/07/17
	UNIT - III	
18.	Closed conduit flow: Renold's experiment	11/07/17
19.	Darcy Weisbach equation, minor losses in pipes in series and pipes in parallel	13/07/17
20.	minor losses in pipes in series and pipes in parallel	13/07/17
21.	Total energy line and hydraulic lines	15/07/17
22.	Measurement of flow: Pitot tube and venture meter	18/07/17
23.	Orifice meter and flow nozzle	18/07/17
24.	Problem practice	20/07/17
25.	Boundary layer concepts: Definition and thickness of boundary layer	20/07/17
26.	Characteristics of BL along thin plate, laminar and turbulent BL	22/07/17
27.	Submerged objects – drag and lift	25/07/17
	UNIT - IV	
28.	Basics of turbo machinery: Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes	25/07/17
29.	Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip	27/07/17
30.	Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip	27/07/17
31.	Velocity diagram, work done and efficiency	29/07/17
32.	Flow over radial curves	29/07/17
33.	Problem practice	03/08/17
34.	Problem practice	03/08/17
35.	Hydraulic turbines: Classifications of turbines, heads and efficiencies	05/08/17
36.	Hydraulic turbines: Classifications of turbines, heads and efficiencies	17/08/17
37.	Impulse and reaction turbines: Pelton wheel, Francis and Kaplan turbines	17/08/17
38.	Impulse and reaction turbines: Pelton wheel, Francis and Kaplan turbines	19/08/17

39.	Impulse and reaction turbines: Pelton wheel, Francis and Kaplan turbines	22/08/17
40.	Impulse and reaction turbines: Pelton wheel, Francis and Kaplan turbines	22/08/17
41.	Work done, efficiencies	24/08/17
42.	Work done, efficiencies	24/08/17
43.	Hydraulic design draft tube theory	26/08/17
44.	Hydraulic design draft tube theory	29/08/17
45.	Hydraulic design draft tube theory	29/08/17
46.	Problem practice	31/08/17
47.	Problem practice	31/08/17
	UNIT - V	
48.	Performance of hydraulic turbines: Geometric similarity	05/09/17
49.	Performance of hydraulic turbines: Geometric similarity	05/09/17
50.	Unit and specific quantities, characteristic curves	07/09/17
51.	Unit and specific quantities, characteristic curves	07/09/17
52.	Governing of turbines, selection of types of turbines	12/09/17
53.	Governing of turbines, selection of types of turbines	12/09/17
54.	Cavitation, surge tank and water hammer	14/09/17
55.	Cavitation, surge tank and water hammer	14/09/17
56.	Problem practice	16/09/17
57.	Centrifugal pumps: Classification and working	19/09/17
58.	Centrifugal pumps: Classification and working	19/09/17
59.	Work done, manometric head, losses and efficiencies	21/09/17
60.	Work done, manometric head, losses and efficiencies	21/09/17
61.	Work done, manometric head, losses and efficiencies	23/09/17
62.	Specific speed and performance characteristic curves	26/09/17
63.	Specific speed and performance characteristic curves	26/09/17
64.	Problem practice	03/10/17
65.	Problem practice	03/10/17
66.	Reciprocating pumps: Working, discharge	05/10/17
67.	Slip and indicator diagram	05/10/17
68.	Problem pracytice	10/10/17
69.	Problem pracytice	10/10/17

Time Table:

Monday	:		Thursday	:	09:30 – 11:10
Tuesday	:	11:20 – 01:00	Friday	:	
Wednesday	:		Saturday	:	9:30 - 10:20

(ME110) DESIGN OF MACHINE MEMBERS – I

COURSE OBJECTIVES

Students will be able to

1. Identify the references that provide tabulated physical and mechanical data that are useful for mechanical design engineers.
2. Recall the material and its properties for the optimum design of a component.
3. Summarise the design principles of various machine members and able to apply the principles in designing new parts as per its functional requirements.
4. Apply the knowledge of the theories of failures.
5. Analyse the theories of failures in defining the failure criteria of the definite machine parts.

COURSE OUTCOMES

At the end of the course students will develop ability to

1. Select a particular machine element and make use of standards parts and dimensions using design data book.
2. Summarize the various theories of failures in different applications.
3. Design the riveted joints for a particular applications.
4. Develop a welded joint for different load applications.
5. Compute the various stresses in bolted joints.
6. Calculate the different dimensions of keys, cotters and knuckle joints.
7. Estimate the strength and rigidity of solid and hallow shafts.
8. Recommend suitable shaft coupling.

LESSON PLAN

Name of the Faculty : D.SRIKANTH RAO **Academic Year:** 2017 - 18
Course Number : ME110 **Course Name :** DMM – I
Program : B-Tech **Branch :** ME
Year / Semester : III / I

S.No.	Topic	Schedule Date
	UNIT - I	
1.	Introduction – Discussion on basics of MOS	12/06/2017
2.	Definition - types of design	13/06/2017
3.	General considerations - selection of materials, Design and manufacturing-	14/06/2017
4.	Design Procedure,	15/06/2017
5.	Simple stresses – Combined stresses - FOS	16/06/2017
6.	stress strain relation - problems-	19/06/2017
7.	Problems on combined stresses-	20/06/2017
8.	Various theories of failures	21/06/2017

9.	Problems on theories of failures-	22/06/2017
10.	Problems on theories of failures-	23/06/2017
11.	Design for strength and regidity-	28/06/2017
12.	The concept of stiffness in tension, bending, torsion and combined	29/06/2017
13.	Eccentric loading	30/06/2017
14.	Problems	03/07/2017
15.	Problems	04/07/2017
	UNIT - II	
16.	Stress concentration	05/07/2017
17.	Fatigue, fatigue loads-	06/07/2017
18.	Endurance limit -	07/07/2017
19.	effect of loading-	11/07/2017
20.	Combined study of variable stress - Goodman's theorm	12/07/2017
21.	Problems	13/07/2017
22.	Soderberg's Theorm	14/07/2017
23.	Problems	17/07/2017
24.	Problems	18/07/2017
25.	Problems	19/07/2017
	UNIT - III	
26.	**Introduction, definition and types of Riveted Joints-**	20/07/2017
27.	Different types of failure of Riveted Joints	21/07/2017
28.	Problems	24/07/2017
29.	Design of Riveted Joint, circumferential joint	25/07/2017
30.	Problems	26/07/2017
31.	Design of Longitudinal Riveted Joint-	27/07/2017
32.	Problems	28/07/2017
33.	Design of structural joint	31/07/2017
34.	Problems	01/08/2017
35.	Design of eccentrically loaded Revited joint-	02/08/2017
36.	Problems	03/08/2017
37.	Discussion regarding 1st MID	04/08/2017
	I- Mid Examination	**08/08/2017 to 10/08/2017**
38.	Welded Joints - Introduction, types-	07/08/2017
39.	Strength of welded joint-	11/08/2017
40.	Special case of fillet welded joints	16/08/2017
41.	Special case of fillet welded joints	17/08/2017
42.	Strength of Butt joint	18/08/2017
43.	Problems	21/08/2017
44.	Eccentrically loaded welded joints case-I	22/08/2017

45.	Eccentrically loaded welded joints case-II	23/08/2017
46.	Problems	24/08/2017
47.	Problems	28/08/2017
48.	Bolted joints - Design	29/08/2017
49.	Problems	30/09/2017
50.	Bolted joints with eccentric loading	31/09/2017
51.	Problems	01/09/2017
	UNIT - IV	
52.	Keys introduction, types - Design	04/09/2017
53.	Problems	05/09/2017
54.	Design of Cotter joint with sleeve	06/09/2017
55.	Design of Cotter joint with socket and spigot end	07/09/2017
56.	problems	08/09/2017
57.	Design of cotter joint with Gib	11/09/2017
58.	Problems	12/09/2017
59.	Design of Knuckel joint	13/09/2017
60.	Problems	14/09/2017
	UNIT - V	
61.	Shafts, Design of solid shaft, Design of Hallow shaft	15/09/2017
62.		
63.	Design of shaft for combined bending and axial loads-	18/09/2017
64.	Problems	19/09/2017
65.	Shaft coupling - design of split muff couplings	21/09/2017
66.	Problems	22/09/2017
67.	Design of Flange couplings , Design of flexible couplings	25/09/2017
68.	Problems	26/09/2017
69.	Previous Papers Discussion	09/10/2017
	II- Mid Examination	12.10.2017 to 16.10.2017

Time Table:

Monday	:	9:30 - 10:20	Thursday	:	11:20 - 12:10
Tuesday	:	1:40 - 2:30	Friday	:	9:30 - 10:20
Wednesday	:	10:20 -11:10	Saturday	:	

(ME435) OPERATIONS RESEARCH

COURSE OBJECTIVES:

Students will be able to

1. Define scientific approach to problem solving for executive management.
2. Illustrate modern methods to complex problems.
3. Solve the assignment problem helps us to maximize our profit or minimize the cost.
4. Develop game theory in which ones choice of action is determined after taking into account all possible alternatives.
5. Build inventory models for solving the inventory problems.

COURSE OUTCOMES:

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

1. List out various Operation Research models.
2. Illustrate linear programming problem.
3. Calculate transportation cost for a various transportation models.
4. Examine various possible path of a travelling salesmen problem.
5. Assess the inventory requirements.
6. Estimate the best replacement period for machines under different conditions.
7. Construct a dynamic programming model.
8. Decide the number of servers to minimize waiting time of customers and idle time of a server.

LESSON PLAN

Name of the Faculty: B.SATISH KUMAR **Academic Year:** 2017 - 18
Course Number : ME435 **Course Name :** OR
Program : B-Tech **Branch :** ME
Year / Semester : III / I

S.No.	Topic	Schedule Date
	UNIT- I	
1	**Development**: Definition, Characteristics and Phases of OR	12-06-2017
2	Types of models, Operations Research models-	12-06-2017
3	Applications of OR Models	13-06-2017
4	Linear Programming Problem Formulation	13-06-2017
5	Graphical solution,	14-06-2017
6	Simplex method	19-06-2017
7	Simplex method	19-06-2017
8	Artificial variables techniques: Big-M method	20-06-2017
9	Two–phase method,	20-06-2017
10	Duality Principle-	21-06-2017

11	Problems Solving	28-06-2017
12	Problems Solving	03-07-2017
13	Problems Solving	03-07-2017
14	Problems Solving	04-07-2017
UNIT – II		
15	**Transportation Problem**: Formulation	04-07-2017
16	Unbalanced transportation problem-	05-07-2017
17	Optimal solution,	11-07-2017
18	Optimal solution,	11-07-2017
19	Degeneracy	12-07-2017
20	**Assignment problem** – Formulation	17-07-2017
21	Optimal solution	17-07-2017
22	Optimal solution	18-07-2017
23	Variants of Assignment Problem	18-07-2017
24	Variants of Assignment Problem	19-07-2017
25	Traveling Salesman problem	24-07-2017
26	Traveling Salesman problem	24-07-2017
27	Problems Solving	25-07-2017
28	Problems Solving	25-07-2017
27	Problems Solving	26-07-2017
28	Problems Solving	31-07-2017
UNIT – III		
29	**Sequencing**: Introduction	31-07-2017
30	Flow –Shop sequencing – n jobs through one & two machines	01-08-2017
31	Flow –Shop sequencing – n jobs through one & two machines	01-08-2017
32	n jobs through three machines	02-08-2017
33	Job shop sequencing – two jobs through ‘m’ machines	07-08-2017
34	Job shop sequencing – two jobs through ‘m’ machines	07-08-2017
I- Mid Examination		08-08-2017 to 10-08-2017
35	**Replacement:** Introduction	21-08-2017

36	Replacement of items that deteriorate with time , when money value is not counted and counted	21-08-2017
37	Replacement of items that deteriorate with time , when money value is not counted and counted	22-08-2017
38	Replacement of items that fail completely Group Replacement-	22-08-2017
39	Replacement of items that fail completely Group Replacement	23-08-2017
40	Problems Solving	28-08-2017
UNIT – IV		
41	**Theory Of Games:** Introduction Terminology	28-08-2017
42	Solution of games with saddle points and without saddle points	29-08-2017
43	Solution of games with saddle points and without saddle points	29-08-2017
44	2 x 2 games – dominance principle	30-08-2017
45	m x 2 & 2 x n games Graphical method	04-09-2017
46	-LPP Method	04-09-2017
47	LPP Method	05-09-2017
48	**Inventory:** Introduction	05-09-2017
49	Single item, Deterministic models	06-09-2017
50	Purchase inventory models with one price break and multiple price breaks	11-09-2017
51	Stochastic models	11-09-2017
55	demand may be discrete variable or continuous variable	12-09-2017
56	Single Period model and no setup cost	12-09-2017
57	Problems Solving	13-09-2017
58	Problems Solving	18-09-2017
UNIT- V		
59	**Waiting Lines:** Introduction & Terminology	18-09-2017
60	Single Channel – Poisson arrivals and Exponential Service times – with infinite population and finite population models	19-09-2017
61	Single Channel – Poisson arrivals and Exponential Service times – with infinite population and finite population models	19-09-2017
62	Single Channel – Poisson arrivals and Exponential Service times – with infinite population and finite population models	25-09-2017
63	Multichannel – Poisson arrivals and exponential service times with infinite population	25-09-2017
64	Multichannel – Poisson arrivals and exponential service times with infinite population	26-09-2017
65	Dynamic Programming: Introduction	26-09-2017

66	Terminology- Bellman's Principle of Optimality	03-10-2017
67	Applications of dynamic programming- shortest path problem-	03-10-2017
68	Applications of dynamic programming- shortest path problem	04-10-2017
69	linear programming problem	09-10-2017
70	linear programming problem	09-10-2017
71	Unit I , II & III Revision	10-10-2017
72	Unit IV &V Revision	10-10-2017
73	Discussing old Question Papers	11-10-2017
	II - Mid Examination	**12-10-2017 to 16-10-2017**

Time Table:

Monday	:	11:20 – 01:00	Thursday	:	
Tuesday	:	2:30 - 3:15	Friday	:	
Wednesday	:	11:20 – 01:00	Saturday	:	

(ES114) MECHATRONICS LABORATORY

COURSE OBJECTIVES

1. Study the Arduino and its Importance to Engineering
2. Study applications such as Interfacing RC components, DC and AC motor Control using Arduino
3. Study and Develop the Load Measurement of Strain Gage, Conveyer belt and Mechatronic Systerm
4. Construct various circuits using OP Amp
5. Choose various methods of Stepper Motor Control using Arduino

COURSE OUTCOMES

At the end of the course, the student will be able to

1. Demonstrate the importance of Arduino
2. Assess the controlling of Output & Input base circuits using Arduino
3. Develop an RC circuit and Interface with Arduino
4. Interpret the Bidirectional control of DC motor using Arduino
5. Examine the control of DC and AC Motors using Arduino
6. Develop a circuit with Stepper Motor drive using Arduino
7. Build various circuits using OP Amps an Interface with Arduino
8. Construct circuits for Load Measurement, Speed Control using Conveyer belt using Arduino and build a Mechatronic system

LESSON PLAN

Name of the Faculty : A. RAJESHWAR RAO **Academic Year:** 2017 - 2018
Course Number : ES114 **Course Name:** Mechatronics Lab
Program : B.Tech **Branch :** ME
Year / Semester : III/I

S.No.	Topic	Schedule Dates (Batch-I)	Schedule Dates (Batch-II)
1	Study of Arduino	12/06/2017	16/06/2017
2	Controlling output LEDs based on inputs (toggle switches) and light-controlled switch using Arduino.	19/06/2017	23/06/2017
3	Design and build circuits using RC components Interfacing them to Arduino.	03/07/2017	30/06/2017
4	Bi-directional control of DC motor using Arduino	17/07/2017	07/07/2017
5	Speed control of DC motor using Arduino	24/07/2017	14/07/2017
6	Position control of DC motor using PWM technique.	31/07/2017	21/07/2017
7	Speed control of AC motor using Arduino.	07/08/2017	28/07/2017
	LAB INTERNAL EXAM-I	21/08/2017	04/08/2017

8	Control of Unipolar, Bipolar, and Full-Step stepper motor drive using Arduino	28/08/2017	11/08/2017
9	Study and calibration of load measurement using strain gauge.	04/09/2017	18/08/2017
10	Configure and test different types of Operational Amplifiers and Interface with Arduino	11/09/2017	01/09/2017
11	Build a small conveyer belt with adjustable speed control.	18/09/2017	08/09/2017 & 15/09/2017
12	Automatic control of AC using temperature sensor	25/09/2017	22/09/2017
	LAB INTERNAL EXAM-II	09/10/2017	06/10/2017

Time Table:

Monday	:	01:40 to 04:00 PM	Thursday	:	
Tuesday	:		Friday	:	10:20 to01:00 PM
Wednesday	:		Saturday	:	

(ME119) MECHANICS OF FLUID AND HYDRAULIC MACHINES LAB

COURSE OBJECTIVES:

Students will be able to

1. Calculate different parameters such as coefficient of friction, coefficient of discharge, coefficient of impact, power, efficiency etc. of various experiments.
2. Estimate pressure variation in a flowing fluid using Bernoulli's principle applications such as venturimeter, orifice meter.
3. Apply basic fluid mechanics principles to the flow of water in pipes, pumps and turbines.
4. Compute the head losses in aluminum, copper and iron pipes.
5. Estimate the performance of turbines and pumps.

COURSE OUTCOMES:

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

1. Apply knowledge of fluid mechanics and hydraulic machines for understanding fluid flow principles and their applications.
2. Practical exposure of using components vacuum gauge pressure gauge, valves, manometers, pipes, motors, pumps, turbines.
3. Compare the theoretical values with the real parameters.
4. Evaluate the head losses in aluminum, copper and iron pipes.
5. Apply basic fluid mechanics principles to the fluid flows.
6. Compare the impact of jet on different type of vanes.
7. Calculate pressure variation in a flowing fluid using Bernoulli's principle.
8. Test the performance of turbines and pumps with different parameters.

LESSON PLAN

Name of the Faculty : SANJEEV KUMAR **Academic Year:** 2017 - 18
Course Number : ME119 **Course Name :** MF&HM Lab
Program : B-Tech **Branch :** ME
Year / Semester : III / I

S.No.	Topic	Schedule Date	
		Monday Batch	Friday Batch
1.	Impact of jets on Vanes.	12/06/17	16/06/17
2.	Performance Test on Pelton Wheel.	19/06/17	23/06/17
3.	Performance Test on Francis Turbine.	03/07/17	30/06/17
4.	Performance Test on Kaplan Turbine.	17/07/17	07/07/17
5.	Performance Test on Single Stage Centrifugal Pump.	24/07/17	14/07/17
6.	Performance Test on Multi Stage Centrifugal Pump.	31/07/17	21/07/17
7.	Performance Test on Reciprocating Pump.	07/08/17	28/07/17
8.	Calibration of Venturimeter.	21/08/17	04/08/17
9.	Determination of friction factor for a given pipe line.	28/08/17	11/08/17

10.	Determination of friction factor for a given pipe line.	04/09/17	18/08/17
11.	Determination of loss of head due to sudden contraction in a pipeline.	11/09/17	01/09/17
12.	Verification of Bernoulli's Theorem.	18/09/17	08/09/17
	Mid-term exam	25/09/17	14/09/17

Time Table:

Monday	:	1:40 - 4:00	Thursday	:	
Tuesday	:		Friday	:	10:20 – 01:00
Wednesday	:		Saturday	:	