## SOFT SKILLS LAB (SSP)

| III/IV Semester: | Common for all Branches | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|
| **Course Code** | **Hours / Week** | | | **Credits** | **Maximum Marks** | |
| **HU204** | **L** | **T** | **P** | **C** | **Continuous Internal Assessment** | **TOTAL** |
| | **0** | **0** | **2** | **1** | **100** | **100** |

**Course Outcomes :** At the end of the course, students will be able to

| CO1: | Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence |
|---|---|
| CO2: | Work together in teams and accomplish objectives in a cordial atmosphere |
| CO3: | Face interviews, GDs and give presentations |
| CO4: | Understand and develop the etiquette necessary to present themselves in a professional setting |
| CO5: | Learn the Principles of Personal effectiveness |

### LIST OF EXPERIMENTS

**1.** Ice breaking Activities, Principles of Time and Stress Management

**2.** Art of speaking -1 (Prepared)

**3.** Art of speaking -2 (Extempore)

**4.** Art of writing - Essay / Picture / Story

**5.** Business etiquette - Telephone and email

**6.** Presentation Skills - Power point making

**7.** Group Discussion – Objectives and Skills tested in a GD, types of GD, Dos and don'ts

**8.** Group Discussion - Practice

**9.** Team work - Drama / Skit / Role play

**10.** Paper / Poster Presentation

**11.** Problem Solving by lateral thinking puzzles

**12.** Know your General Awareness / Knowledge - Quiz

**13.** Principles of Personal excellence

**Reference Books:**

1. Stephen R. Covey, "The Seven Habits of Highly Effective People", Pocket Books Publishers, London

2. Priyadarshani Patnaik, "Group Discussion and Interview Skills with VCD", Foundation Books

3. Sangeeta Sharma & Binod Mishra, "Communication Skills for Engineers and Scientists", PHI Learning Private Limited

4. Shiv Khera, "You Can Win", MacMillan India Publishers, New Delhi

5. Campus Connect Portals - TCS - https://campuscommune.tcs.com; Infosys - http://campusconnect.infosys.com/

## ADVANCED COMMUNICATION SKILLS LAB (ACSP)

| III / IV Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| HU203 | L | T | P | C | Continuous Internal Assessment | TOTAL | |
| | 0 | 0 | 2 | 1 | 100 | 100 | |

**Course Outcomes :** At the end of the course students will be able to

| CO1: | Speak in English confidently, fluently and effectively |
|---|---|
| CO2: | Exhibit team playing and leadership skills |
| CO3: | Give Presentations effectively |
| CO4: | Comprehend the Verbal and Non-verbal texts |
| CO5: | Prepare Resume, Company profiles and Project presentations |
| CO6: | Enhance possibilities of Job prospects |

<div align="center">LIST OF EXPERIMENTS</div>

Focus in the lab is more on fluency than on accuracy

**1.** Ice breaking Activities

**2.** JAM

**3.** Listening Comprehension – Practice tests

**4.** Oral Presentation

**5.** Presentation Strategies

**6.** Group Discussion – Team Playing, Leadership Skills

**7.** Debate

**8.** PPT's – Principles and Formats

**9.** Information Transfer – Verbal to Non-verbal and Vice-Versa

**10.** Resume Preparation

**11.** Company Profiling

**12.** Interview Skills – a) Telephonic Interview
                          b) Personal Interview

**13.** Project Presentation

**Reference Books:**

**1.** Communication Skills, Sanjay Kumar and PushpaLata, Oxford University Press.

**2.** English Language Laboratories, A Comprehensive Manual, Nira Konar, PHI.

**3.** Technical Communication, 3 E, Raman and Sharma, Oxford University Press.

**4.** Personality Development and Soft Skills, Barun k. Mitra, Oxford University Press.

# INTRODUCTION TO INFORMATION SYSTEMS (IIS)

| V Semester: B.Tech | | | | | | Scheme: **2017** | | |
|---|---|---|---|---|---|---|---|---|
| **Course** | **Category** | **Hours/Week** | | | **Credits** | **Maximum Marks** | | |
| OE302 | Open Elective - 1 | **L** | **T** | **P** | **C** | **Continuous Internal Assessmen** | **End Exam** | **TOTAL** |
| | | **3** | **0** | **0** | **3** | **40** | **60** | **100** |

| Sessional Exam Duration:2 Hrs | End Exam Duration:3 Hrs |
|---|---|

**Course Outcomes: At the end of the course students will be able to**

**CO1:** Understand the concepts of Computer architecture and functionalities of System software

**CO2:** Understand the page replacement and CPU Scheduling Algorithms

**CO3:** Understand the phases of software development life cycle and process models.

**CO4:** Design ER model for real life scenarios

**CO5:** Apply SQL commands to create, update, modify and retrieve data from the data bases.

**CO6:** Apply normalization techniques to normalize the database.

## UNIT– I

**Fundamentals of Computers & Computer Architecture:** Introduction, Organization of a small computer, Central Processing Unit, Execution cycle, Instruction categories, measure of CPU performance, Memory, Input/output devices, BUS, addressing modes

**System Software:** Assemblers, Loaders and linkers, Compilers and interpreters.

## UNIT– II

**Operating System:** Introduction, Memory management schemes, Page replacement algorithms, Process management, CPU scheduling algorithms.

**Software engineering:** Software engineering: Introduction to Software engineering, Life cycle of a software project, software Development models.

## UNIT– III

**Relational Database Management System:** Introduction to DBMS, the database technology, data models, Database Users.

**Entity Relationship (E-R) Modelling:** Introduction, Notations, Modelling E-R Diagrams, Case Studies, Merits and Demerits of E-R modelling.

## UNIT– IV

**Structured Query Language (SQL):** Introduction to SQL, Data types, Data Definition language commands, Data Manipulation Language Commands and Data control Language Commands, Candidate Key, Primary key, Foreign key, Select Clause, Where Clause, Logical Connectives – AND, OR, Range Search, Pattern Matching, Order By, Group By, Set Operations – Union, Intersect and Minus, Aggregate Functions, Join Operations.

| UNIT– V |
|---|

**Normalization:**

Introduction, Need for Normalization, Process of Normalization, Types of Normal Forms (1 NF, 2 NF,

3 NF & BCNF), Merits and Demerits of Normalization.

**Text Books:**

1. Campus Connect Foundation Program – Computer Hardware and System Software Concepts, Programming Fundamentals- Vol. – 1, INFOSYS**.**

2. Campus Connect Foundation Program – Relational Database Management System, Client Server Concepts, Introduction to Web Technologies - Vol. – 4, INFOSYS

3. Henry F. Korth& Abraham Silberschatz, - Data Base System Concepts, 5th Edition, 2005, c Graw hill

**Reference Books:**

1. M. Morris Mano [2011], [3 rd Edition], Computer system architecture, Pearson Education, 2011

2. Sommerville [2008], [7th Edition], Software Engineering, Pearson education.

3. Raghu Ramakrishna and Johannes Gehrke [2003], [3rd Edition], Data Base Management Systems, TATA McGraw Hil

4. Tanenbaum [2000], Modern Operating System, Pearson Education.

**Web References:**

1. https://www.w3schools.com/sql/

2. https://www.geeksforgeeks.org/dbms/

3. https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

**Question Paper Pattern:**

**Sessional Exam**

The question paper for sessional examination is for 30 marks, covering half of the syllabus for first Sessional and remaining half for second sessional exam. Question No.1 which carries 6 marks contains three short answer questions of two marks each. The remaining three questions shall be EITHER/OR type questions carrying 8 marks each.

**End Exam**

Question Paper Contains Six Questions. Question 1 contains 5 short Answer questions each of 2 marks. (Total 10 marks) covering one question from each unit. The remaining five questions shall be EITHER / OR type questions carrying 10 marks each. Each of these questions is from one unit and may contain sub-questions. i.e. there will be two questions from each unit and the student should answer any one question.

# METALLURGY AND WELDING LAB (MTW(P))

| III Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **Hours / Week** | | | **Credits** | **Maximum Marks** | | |
| **ME206** | **L** | **T** | **P** | **C** | **Continuous Internal Assessment** | **End Exam** | **TOTAL** |
| | **0** | **0** | **2** | **1** | **50** | **50** | **100** |

**End Exam Duration : 3 Hrs**

| | |
|---|---|
| **Course Outcomes :** At the end of the course students will be able to | |
| **CO1:** | Prepare the specimen and recognize the micro structures of metals and alloys using metallurgical microscope |
| **CO2:** | Conduct the Jominy –end quench test for determination of hardenability of metal |
| **CO3:** | Measure GFN, permeability, clay content, moisture content, shear and compressive strength of the moulding sand |
| **CO4:** | Prepare welded joints using Metal Arc, MIG and TIG welding process |

## LIST OF EXPERIMENTS

**1.** Specimen preparation

**2.** Study of Metallurgical microscope and study of some structures of ferrous and non-ferrous specimens

**3.** Experiment to find GFN on Sieve Shaker

**4.** Experiment to find percentage of clay and percentage of moisture in the moulding sand

**5.** Permeability test on moulding sand

**6.** Shear test & Compression test on sand mould

**7.** Determining hardness of material after various heat treatment processes

**8.** Determining hardenability using Jominy end Quench Apparatus

**9.** Experiment on Arc welding, Arc cutting and Fire cracker welding

**10.** MIG welding and Testing of weld cracks by die penetrant test

**11.** Joining of thin sheet metals by Spot welding

**12.** Joining thin metal plates by Gas Welding

**13.** Making of pet bottle and cap using Blow moulding and Injection moulding

Note: Student has to perform at least 10 experiments from the above list

## MECHANICS OF SOLIDS AND FLUIDS LAB (MSF(P))

| IV Semester: | Mechanical Engineering | | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | | |
| CE216 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL | |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 | |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course, students will be able to

| CO1: | Understand working of centrifugal pumps, submersible pump and reciprocating pump |
|---|---|
| CO2: | Understand various flow meters and the concept of fluid mechanics |
| CO3: | Understand procedures for conducting tensile, torsion tests on mild steel specimens |
| CO4: | Determine the Young's modulus using deflection test on beams and tensile test on rods, tension and compression test on springs, and impact tests on steel |

### LIST OF EXPERIMENTS

1. a. Determination of coefficients of discharge, velocity and contraction for a small orifice by Constant head method
   b. Determination of coefficient of discharge for an external mouthpiece by Constant head method

2. Determination of friction factor for a given pipe line

3. a. Calibration of Venturimeter
   b. Calibration of Orificemeter

4. Performance test on single stage centrifugal pump

5. Performance test on submersible pump

6. Performance test on Reciprocating pump

7. To study the stress-strain characteristics of Mild steel rod using Universal Testing Machine

8. To find the modulus of elasticity of given material by measuring deflection in simply supported beam

9. To find the modulus of rigidity of given material using Torsion Testing Machine

10. To find the modulus of rigidity of given material using Spring Testing Machine

11. To find modulus of elasticity by conducting flexural test on carriage spring

12. a. To find Rock well hardness number of given material
    b. To find impact strength (Izod & Charpy) using impact testing machine

Note: Student has to perform at least 10 experiments from the above list

## MACHINE TOOLS LAB (MT(P))

| IV Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **Hours / Week** | | | **Credits** | **Maximum Marks** | | |
| **ME213** | **L** | **T** | **P** | **C** | **Continuous Internal Assessment** | **End Exam** | **TOTAL** |
| | **0** | **0** | **2** | **1** | **50** | **50** | **100** |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course students will be able to

| CO1: | Perform taper turning, step turning, eccentric turning and thread cutting on cylindrical work piece using lathe machine |
|---|---|
| CO2: | Perform drilling, shaping, milling and slotting operations on work piece using relevant machine tools |
| CO3: | Prepare single point cutting tools using Tool and cutter grinder |
| CO4: | Prepare pattern for casting |

### LIST OF EXPERIMENTS

**1.** Step turning on Lathe

**2.** Taper turning by compound swivel method

**3.** Eccentric turning on Lathe

**4.** Right hand thread cutting and Left hand thread cutting on Lathe

**5.** Making of a Single point cutting tool by formed grinding wheel on tool cutter grinder

**6.** Drilling, reaming, tapping and counter sinking

**7.** Pattern making

**8.** V – groove cutting on shaper

**9.** Key way cutting on slotting machine and Spur gear cutting on milling machine

**10.** Wood turning

**11.** Alignment Tests on Lathe Machine

**12.** Alignment Tests on Radial Drilling Machine

Note: Student has to perform at least 10 experiments from the above list

# COMPUTER AIDED DRAFTING LAB (CAD(P))

| IV Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| ME214 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 |

**End Exam Duration : 3 Hrs**

| | |
|---|---|
| **Course Outcomes :** At the end of the course, students will be able to | |
| **CO1:** | Understand various AutoCAD features |
| **CO2:** | Draw 2D models using AutoCAD |
| **CO3:** | Draw 3D components using AutoCAD |

## LIST OF EXPERIMENTS

1. Introduction to CAD software

2. Exercise on usage of    Auto CAD 2D drawing commands

3. Exercise on usage of    Auto CAD 2D editing  commands

4. Exercise on usage of    Auto CAD 2D dimension commands

5. Exercises on Auto CAD 2D drawings -I

6. Exercises on Auto CAD 2D drawings - II

7. Introduction to 3D Modeling using AutoCAD Software

8. Modeling of Component in 3D – V block

9. Modeling of Component in 3D – Open Bearing

10. Modeling of Component in 3D – Angular block

11. Modeling of Component in 3D – Dovetail Guide

12. Modeling of Component in 3D – Dovetail Bracket

13. Modeling of Component in 3D – Dovetail stop

Note: Student has to perform at least 10 experiments from the above list

# GEOMETRIC MODELLING LAB     (GM(P))

| V Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| ME305 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course, students will be able to

| CO1: | Understand features of CATIA and Creo software |
|---|---|
| CO2: | Model 3D components using CATIA |
| CO3: | Model 3D components using Creo |
| CO4: | Create assembly of machine components using Creo |

## LIST OF EXPERIMENTS

**Part Modelling**

1. Modeling of Component in 3D – V block using CATIA

2. Modeling of Component in 3D – Open Bearing using CATIA

3. Modeling of Component in 3D – Angular block using CATIA

4. Modeling of Component in 3D – V block using Creo Parametric

5. Modeling of Component in 3D – Open Bearing using Creo Parametric

6. Modeling of Component in 3D – Angular block using Creo Parametric

7. Modeling of Component in 3D – Dovetail Guide using Creo Parametric

8. Modeling of Component in 3D – Dovetail Bracket using Creo Parametric

9. Modeling of Component in 3D – Dovetail stop using Creo Parametric

**Assembly Modelling**

1. Assembly of Oldham's coupling using Creo Parametric

2. Assembly of a knuckle joint

3. Assembly of screw jack  parts

4. Assembly of a footstep bearing

5. Assembly of a stuffing box

6. Assembly of a square tool post

Note: Student has to perform at least 10 experiments from the above lists.

# THERMAL ENGINEERING LAB      (TE(P))

| V Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| **ME306** | **L** | **T** | **P** | **C** | Continuous Internal Assessment | End Exam | TOTAL |
| | **0** | **0** | **2** | **1** | **50** | **50** | **100** |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course, students will be able to

| CO1: | Determine flash and fire point of fuels and draw valve timing diagram of I.C engine |
|---|---|
| CO2: | Evaluate performance characteristics of four stroke diesel engines using hydraulic, Mechanical, electrical loading |
| CO3: | Prepare the heat balance sheet for four stroke diesel engine |
| CO4: | Evaluate performance characteristics of blower and compressor |
| CO5: | Determine the friction power for MPFI engine |
| CO6: | Understand the various components of I.C engine |

## LIST OF EXPERIMENTS

**1.** a) Study of I.C. Engine and Valve Timing Diagram of a 4-stroke engine

   b) Determining the Flash and Fire Point of a given oil using Pensky apparatus

**2.** Load test on 10 H.P, two cylinder diesel engine using Hydraulic loading

**3.** Heat balance test on 5 H.P, single cylinder diesel engine using electrical loading

**4.** Retardation test on 5 H.P, single cylinder diesel engine using mechanical loading

**5.** Morse test on MPFI engine

**6.** Performance test on Two stage reciprocating air compressor

**7.** Performance test on Blower rig

**8.** Load test on 5 H.P, single cylinder diesel engine with D.C. generator loading

**9.** Determine the theoretical power coefficient of a laboratory model wind turbine using wind tunnel

**10.** Practicing of Dis-Assembly/Assembly of I.C. Engine

**11.** Determining the % emissions of 4 stroke diesel engine using exhaust gas analyser

**Experiments beyond the curriculum:**

**1.** Load test on 5 H.P diesel engine fuelled with blend of Biodiesel subjected to D.C. generator loading

**2.** Test on Vortex tube

Note: Student has to perform at least 10 experiments from the above lists.

# ENGINEERING METROLOGY LAB (EMT(P))

| VI Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| ME312 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course students will be able to

| CO1: | Measure dimensions of Linear, angular, circular objects using appropriate equipment |
|---|---|
| CO2: | Determine the elements of gear and screw threads elements using metrology equipment |
| CO3: | Draw the control charts for the given samples using SQC |
| CO4: | Evaluate standard times using work measurement technique |

## LIST OF EXPERIMENTS

**1.** Measurement of parameters of Screw Threads

**2.** Measurement of angle of Taper plug gauge

**3.** Measurement of angle of Taper ring gauge

**4.** Measurement of co-ordinates of Jig plate

**5.** Measurement of taper angle of an object using Sine bar and Bevel Protractor

**6.** a). Measurement of angle of the V-block using ball and height gauges

   b). Measurement of Radius of Curvature of a ring

**7.** Measurement of Gear parameters using gear tooth vernier callipers

**8.** a). To find small angles and length measurement on objects using Tool Makers micro scope

   b). To find small angles and length measurement on objects using Profile Projector

**9.** Measurement of surface roughness using surface roughness tester

**10.** Work Study- (a) Method study (b) Time study

**11.** Statistical Quality Control – X bar and R charts

**12.** Acceptance Sampling

**13.** To collect the anthropometric data using "Anthropometer"

Note: Student has to perform at least 10 experiments from the above lists

# DATABASE AND COMPUTATIONS PRACTICE LAB (DBC(P))

| VI Semester: | Mechanical Engineering | | | | | Scheme : 2017 | |
|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | |
| ME313 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 |

**End Exam Duration : 3 Hrs**

**Course Outcomes :** At the end of the course, students will be able to

| CO1: | Understand the SQL concepts |
|---|---|
| CO2: | Execute the solutions of SQL queries for creating the Tables and Function for retrieving and manipulation of Data |
| CO3: | Understand the basic MATLAB operations |
| CO4: | Solve the mathematical problems using MATLAB |

## LIST OF EXPERIMENTS

**Part A - SQL**

    **1.** Introduction to Database Management Systems

    **2.** Creating Tables

    **3.** Insertion and Manipulation of data in tables

    **4.** Retrieval of Data from Tables

    **5.** Operators in SQL

    **6.** SQL Functions

    **7.** Set operators and joins

**Part B – MATLAB**

    **1.** Basics

    **2.** Matrix Operations

    **3.** Creating a script file

    **4.** Generating Graphs

**Additional Exercises**

    **1.** Sub Queries (SQL)

    **2.** Formatting Commands (SQL)

    **3.** 3D – Plotting (MAT LAB)

Note: Student has to perform 10 experiments, at least 4 from each group

# HEAT TRANSFER LAB (HT(P))

| VI Semester: | Mechanical Engineering | | | | | Scheme : 2017 | | |
|---|---|---|---|---|---|---|---|---|
| Course Code | Hours / Week | | | Credits | Maximum Marks | | | |
| ME314 | L | T | P | C | Continuous Internal Assessment | End Exam | TOTAL | |
| | 0 | 0 | 2 | 1 | 50 | 50 | 100 | |

**End Exam Duration : 3 Hrs**

| |
|---|

**Course Outcomes :** At the end of the course students will be able to

| CO1: | Determine thermal conductivity and heat transfer coefficient through metals and powders |
|---|---|
| CO2: | Apply heat transfer concepts to interpret heat transfer rate of composite walls, fins |
| CO3: | Analyze the performance of heat exchangers |
| CO4: | Apply the radiation concepts on different heat transfer equipment |

## LIST OF EXPERIMENTS

**1.** Test on composite wall

**2.** a). Test on Lagged pipe

    b). Test on Lagged sphere

**3.** a). Test on emissivity apparatus

    b). Test on critical flux apparatus

**4.** Test on Stefan Boltzmann apparatus

**5.** Test on Natural convection Equipment

**6.** Test on pin fin apparatus

**7.** Test on Heat Exchanger

**8.** Test on Metal rod equipment

**9.** Test on Drop wise and Film wise condensation apparatus

**10.** Performance test on refrigeration motor

**Experiments beyond the curriculum**

**11.** Test on unsteady state heat transfer apparatus

Note: Student has to perform at least 10 experiments from the above lists

**ME405: CAE LAB (CAEP)**
**(For ME -VII Semester)**

**Scheme** : 2013
**Internal Assessment** : 30
**End Exam** : 70
**End Exam Duration** : 3 Hrs

| L | T/D | P | C |
|---|-----|---|---|
| - | - | 3 | 2 |

**Course objective**:
To get familiarize with analysis of different structures using ANSYS

**Course outcomes:**
    The student will be able to do
1. Stress analysis of trusses
2. Stress analysis of beams
3. Stress analysis of 2D and 3D structures
4. Thermal analysis of plate.

**List of experiments using ANSYS**

1. Introduction to ANSYS software
2. Analysis of 2D Truss
3. Analysis of plate with a hole subjected to tensile load
4. Analysis of flat rectangular plate with a hole under axi-symmetric conditions
5. Analysis of a bracket
6. Stress and deflection Analysis of cantilever beams
7. Stress analysis of simply supported beams
8. Analysis of bars with different materials
9. Analysis of taper bar
10. Coupled structural and thermal analysis
11. Exercise on simple conduction
12. Analysis of square plate considering conduction and convection
13. Model analysis of beams

| | L | T/D | P | C |
|---|---|---|---|---|
| Scheme : 2013<br>Internal Assessment : 30<br>End Exam : 70<br>End Exam Duration : 3 Hrs | - | - | 3 | 2 |

**Course objective**:
To get familiarize with different manufacturing software

**Course outcomes:**
After completion of laboratory students are able to
1. Simulate components in ESPIRIT CAM, MASTER CAM, CNC TUTOR.
2. Developing CNC part programs using G and M codes and manufacture prototypes on CNC machines.
3. Produce simple components on 3D printer.

## LIST OF EXPERIMENTS
1. CNC Part Programming on ESPIRIT CAM LATHE.
2. CNC Part Programming on ESPIRIT CAM MILLING.
3. CNC Part Programming on MASTER CAM LATHE.
4. CNC Part Programming on MASTER CAM MILLING.
5. Producing Work piece on HITECH CNC LATHE( Step Turning)
6. Producing Work piece on HITECH CNC LATHE (Taper Turning).
7. Producing Work piece on HITECH CNC LATHE ( Radius turning)
8. Producing Work piece on HITECH CNC MILLING ( Model-1)
9. Producing Work piece on HITECH CNC MILLING ( Model-2)
10. Producing a simple model using 3D Printing.

# ME410: DYNAMICS & INSTRUMENTATION LAB (DIN(P))
## (For ME -VIII Semester)

**Scheme** : 2013
**Internal Assessment** : 30
**End Exam** : 70
**End Exam Duration** : 3 Hrs

| L | T/D | P | C |
|---|-----|---|---|
| - | - | 3 | 2 |

**Course objective**:
To study the static and dynamic behaviour of machines

**Course outcomes:**
Students will be able to
1. Understand and use various measurement methods
2. Understand and verify the laws governing the dynamics of machines
3. Understand the case studies in the field of Vibration.

## LIST OF EXPERIMENTS
### DYNAMICS

1.    Determination of Radius of Gyration of Connecting Rod
2.    Longitudinal Vibrations of Spring-Mass System.
3.    Experiment on Governors
4.    Static and Dynamic balancing of rotating masses and reciprocating masses
5.    Velocity & Acceleration of Cam & Follower
6.    Test on Gyroscope
7.    Study of Damped and Undamped Torsional Vibration
8.    Torsional Vibration of Single and Two Rotor System
9.    Verification of Dunkerly's Rule
10.   Critical speed or Whirling speed of shaft

## INSTRUMENTATION

1.    Test on Instrumentation Tutors
2.    Calibration of Dead Weight Presser Gauge.
3.    Study of simple control systems
4.    Calibration of rotameter