Syllabus copy of courses 2020 – 2021

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

LIST OF EXPERIMENTS

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.

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

CAE LAB (CAE(P))

VII Semester:	Mechanical Engineering					Scheme : 2017	
Course Code	Hours / Week			Credits	Maximum Marks		
ME402	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 basic features of ANSYS
CO2:	Analyze the deformation and stresses in beams, trusses and plate using ANSYS
CO3:	Analyze heat transfer on plates using ANSYS

LIST OF EXPERIMENTS

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

Experiments beyond the curriculum

13. Modal analysis of beams
14. Fracture Toughness and Fatigue problems
15. Contact problems

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

CAM LAB (CAM(P))

VII Semester:	Mechanical Engineering			Scheme : 2017			
Course Code	Hours / Week			Credits	Maximum Marks		
ME403	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:	Simulate the components in ESPIRIT CAM, MASTER CAM						
CO2:	Write and execute CNC part programs using G and M codes and manufacture components on CNC machines						
CO3:	Produce simple components on 3D printer						

LIST OF EXPERIMENTS

1. Modelling and simulation of machining using ESPRIT CAM for Lathe
2. Modelling and simulation of machining using ESPRIT CAM for Milling
3. Modelling and simulation of machining using MASTER CAM for LATHE
4. Modelling and simulation of machining using MASTER CAM for MILLING
5. Step Turning on HITECH CNC LATHE (Step Turning)
6. Taper Turning on HITECH CNC LATHE (Taper Turning)
7. Radius Turning 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
11. Modelling and simulating Complex geometries using CUT viewer Lathe
12. Modelling and simulating Complex geometries using CUT viewer Mill
Note: Student has to perform at least 10 experiments from the above lists

DYNAMICS & INSTRUMENTATION LAB (DIN(P))

VII Semester:	Mechanical Engineering					Scheme : 2017	
Course Code	Hours / Week			Credits	Maximum Marks		
ME404	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:	Balance rotating masses in different planes
CO2:	Measure the critical speed of the shaft with fixed end conditions
CO3:	Measure vibration characteristics of spring mass system, rotor system and damped system
CO4:	Measure pressure, displacement and temperature using instrumentation tutors

LIST OF EXPERIMENTS

DYNAMICS

1. Determination of Radius of Gyration of Connecting Rod
2. Longitudinal Vibrations of Spring-Mass System
3. Performance characteristic curves of Watt, Porter, Proell and Hartnell Governers using Universal Governer apparatus
4. Static and Dynamic balancing of rotating masses and reciprocating masses
5. Velocity & Acceleration analysis of Cam & Follower
6. Verification of magnitude of gyroscopic couple & applied couple on motorized gyroscope
7. Study of Damped and Undamped Torsional Vibrations
8. Torsional Vibrations of Single and Two Rotor System
9. Verification of Dunkerley's Rule
10. Determination of Critical speed or Whirling speed of shaft

INSTRUMENTATION

11. Test on Instrumentation Tutors

12. Calibration of Dead Weight Pressure Gauge
13. Study of simple control systems
14. Calibration of rotameter
Note: Student has to perform at least 10 experiments from the above lists