

**Syllabus copy of courses 2021 - 2022**  
**SOFT SKILLS Lab (SSP)**

<b>III/IV Semester: Common for all Branches</b>						<b>Scheme : 2020</b>		
<b>Course Code</b>	<b>Category</b>	<b>Hours/Week</b>			<b>Credits</b>	<b>Maximum Marks</b>		
<b>SCCM01</b>	<b>SC</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
					<b>4</b>	<b>2</b>	<b>40</b>	<b>60</b>
<b>Course Outcomes :</b> At the end of the course, students will be able to								
<b>CO1:</b>	Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence							
<b>CO2:</b>	Work together in teams and accomplish objectives in a cordial atmosphere							
<b>CO3:</b>	Face interviews, GDs and give presentations							
<b>CO4:</b>	Understand and develop the etiquette necessary to present themselves in a professional setting							
<b>CO5:</b>	Learn the Principles of Personal effectiveness							
<b>LIST OF EXPERIMENTS</b>								
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								
<b>Reference Books:</b>								
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/>

### 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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course students will be able to							
<b>CO1:</b>	Prepare the specimen and recognize the micro structures of metals and alloys using metallurgical microscope						
<b>CO2:</b>	Conduct the Jominy –end quench test for determination of hardenability of metal						
<b>CO3:</b>	Measure GFN, permeability, clay content, moisture content, shear and compressive strength of the moulding sand						
<b>CO4:</b>	Prepare welded joints using Metal Arc, MIG and TIG welding process						
<b>LIST OF EXPERIMENTS</b>							
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))**

<b>IV Semester:</b>	<b>Mechanical Engineering</b>				<b>Scheme : 2017</b>		
<b>Course Code</b>	<b>Hours / Week</b>			<b>Credits</b>	<b>Maximum Marks</b>		
<b>CE216</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
		<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>50</b>	<b>50</b>
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Understand working of centrifugal pumps, submersible pump and reciprocating pump						
<b>CO2:</b>	Understand various flow meters and the concept of fluid mechanics						
<b>CO3:</b>	Understand procedures for conducting tensile, torsion tests on mild steel specimens						
<b>CO4:</b>	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						
<b>LIST OF EXPERIMENTS</b>							
<b>1.</b>	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						
<b>2.</b>	Determination of friction factor for a given pipe line						
<b>3.</b>	a. Calibration of Venturimeter b. Calibration of Orificemeter						
<b>4.</b>	Performance test on single stage centrifugal pump						
<b>5.</b>	Performance test on submersible pump						
<b>6.</b>	Performance test on Reciprocating pump						
<b>7.</b>	To study the stress-strain characteristics of Mild steel rod using Universal Testing Machine						
<b>8.</b>	To find the modulus of elasticity of given material by measuring deflection in simply supported beam						
<b>9.</b>	To find the modulus of rigidity of given material using Torsion Testing Machine						
<b>10.</b>	To find the modulus of rigidity of given material using Spring Testing Machine						
<b>11.</b>	To find modulus of elasticity by conducting flexural test on carriage spring						
<b>12.</b>	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))**

<b>IV Semester:</b>	<b>Mechanical Engineering</b>				<b>Scheme : 2017</b>		
<b>Course Code</b>	<b>Hours / Week</b>			<b>Credits</b>	<b>Maximum Marks</b>		
<b>ME213</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course students will be able to							
<b>CO1:</b>	Perform taper turning, step turning, eccentric turning and thread cutting on cylindrical work piece using lathe machine						
<b>CO2:</b>	Perform drilling, shaping, milling and slotting operations on work piece using relevant machine tools						
<b>CO3:</b>	Prepare single point cutting tools using Tool and cutter grinder						
<b>CO4:</b>	Prepare pattern for casting						
<b>LIST OF EXPERIMENTS</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Understand various AutoCAD features						
<b>CO2:</b>	Draw 2D models using AutoCAD						
<b>CO3:</b>	Draw 3D components using AutoCAD						
<b>LIST OF EXPERIMENTS</b>							
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))**

<b>V Semester:</b>	<b>Mechanical Engineering</b>				<b>Scheme : 2017</b>		
<b>Course Code</b>	<b>Hours / Week</b>			<b>Credits</b>	<b>Maximum Marks</b>		
<b>ME305</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Understand features of CATIA and Creo software						
<b>CO2:</b>	Model 3D components using CATIA						
<b>CO3:</b>	Model 3D components using Creo						
<b>CO4:</b>	Create assembly of machine components using Creo						
<b>LIST OF EXPERIMENTS</b>							
<b>Part Modelling</b>							
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							
<b>Assembly Modelling</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Determine flash and fire point of fuels and draw valve timing diagram of I.C engine						
<b>CO2:</b>	Evaluate performance characteristics of four stroke diesel engines using hydraulic, Mechanical, electrical loading						
<b>CO3:</b>	Prepare the heat balance sheet for four stroke diesel engine						
<b>CO4:</b>	Evaluate performance characteristics of blower and compressor						
<b>CO5:</b>	Determine the friction power for MPFI engine						
<b>CO6:</b>	Understand the various components of I.C engine						
<b>LIST OF EXPERIMENTS</b>							
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							
<b>Experiments beyond the curriculum:</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course students will be able to							
<b>CO1:</b>	Measure dimensions of Linear, angular, circular objects using appropriate equipment						
<b>CO2:</b>	Determine the elements of gear and screw threads elements using metrology equipment						
<b>CO3:</b>	Draw the control charts for the given samples using SQC						
<b>CO4:</b>	Evaluate standard times using work measurement technique						
<b>LIST OF EXPERIMENTS</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Understand the SQL concepts						
<b>CO2:</b>	Execute the solutions of SQL queries for creating the Tables and Function for retrieving and manipulation of Data						
<b>CO3:</b>	Understand the basic MATLAB operations						
<b>CO4:</b>	Solve the mathematical problems using MATLAB						
<b>LIST OF EXPERIMENTS</b>							
<b>Part A - SQL</b>							
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							
<b>Part B – MATLAB</b>							
1. Basics							
2. Matrix Operations							
3. Creating a script file							
4. Generating Graphs							
<b>Additional Exercises</b>							
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	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
	0	0	2	1	50	50	100
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course students will be able to							
<b>CO1:</b>	Determine thermal conductivity and heat transfer coefficient through metals and powders						
<b>CO2:</b>	Apply heat transfer concepts to interpret heat transfer rate of composite walls, fins						
<b>CO3:</b>	Analyze the performance of heat exchangers						
<b>CO4:</b>	Apply the radiation concepts on different heat transfer equipment						
<b>LIST OF EXPERIMENTS</b>							
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							
<b>Experiments beyond the curriculum</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Understand basic features of ANSYS						
<b>CO2:</b>	Analyze the deformation and stresses in beams, trusses and plate using ANSYS						
<b>CO3:</b>	Analyze heat transfer on plates using ANSYS						
<b>LIST OF EXPERIMENTS</b>							
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)							
<b>Experiments beyond the curriculum</b>							
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	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>End Exam</b>	<b>TOTAL</b>
	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course, students will be able to							
<b>CO1:</b>	Simulate the components in ESPRIT CAM, MASTER CAM						
<b>CO2:</b>	Write and execute CNC part programs using G and M codes and manufacture components on CNC machines						
<b>CO3:</b>	Produce simple components on 3D printer						
<b>LIST OF EXPERIMENTS</b>							
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
<b>End Exam Duration : 3 Hrs</b>							
<b>Course Outcomes :</b> At the end of the course students will be able to							
<b>CO1:</b>	Balance rotating masses in different planes						
<b>CO2:</b>	Measure the critical speed of the shaft with fixed end conditions						
<b>CO3:</b>	Measure vibration characteristics of spring mass system, rotor system and damped system						
<b>CO4:</b>	Measure pressure, displacement and temperature using instrumentation tutors						
<b>LIST OF EXPERIMENTS</b>							
<b>DYNAMICS</b>							
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 Governors using Universal Governor 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							
<b>INSTRUMENTATION</b>							
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							