PO, PSO, CO Attainment

PSN COLLEGE OF ENGINEERING AND TECHNOLOGY
Melathediyoor, Tirunelveli 627152
(An Autonomous Institution affiliated to Anna University, Chennai)
An ISO 9001:2015 Certified Institution
Accredited by NAAC with A+ Grade in 3rd Cycle
Department of Mechanical Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes and Program Outcomes

AY 2022-2023

2.6.2	COURSE OUTCOMES AND PROGRAM OUTCOMES

Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) (25)

(Program Outcomes as mentioned in Annexure I and Program Specific Outcomes as defined by the Program)

Program Outcomes (POs) & Program Specific Outcomes (PSOs) of Mechanical Engineering department is furnished below:

Program Outcomes:

At the time of graduation, students from the Mechanical Engineering program will possess:

Engineering Graduates will be able to

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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 the public health and safety, and the cultural, societal, and environmental considerations.
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.
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.
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.
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.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with 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.
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.
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 SPECIFIC OUTCOMES (PSOs)

Engineering Graduates will be able to

1. To Prepare Mechanical Engineering Graduates with an outstanding knowledge of industrial automation for a successful career.
2. To develop an ability to accept global challenges and apply engineering knowledge for solving various problem in the area of mechanical engineering using computer aided engineering

COURSE TITLES: The following are the course titles along with course codes for the program:

Note: 1. C101 to C410 indicative Courses for first year to final year. First numeric digit indicates year of study, remaining digit indicate course number.

S. NO	Course Code	Course Name
Regulation 2018		
1.	C101	Technical English
2.	C102	Elementary Mathematics for Engineers
3.	C103	Applied Physics I
4.	C104	Applied Chemistry I

5.	C105	Engineering Graphics
6.	C106	Fundamentals of Computers and Python Programming
7.	C107	Applied Physics &chemistry Lab I
8.	C108	Computer lab
9.	C109	Workshop Practice
10.	C110	Business Communication and presentation Skill
11.	C111	Engineering Mathematics I
12.	C112	Applied Physics II
13.	C113	Applied Chemistry II
14.	C114	Engineering Mechanics
15.	C115	Programming in C
16.	C116	Basic Engineering
17.	C117	Applied Physics &chemistry Lab II
18.	C118	C Programming lab
19.	C119	Basic Electrical and Electronics lab
20.	C201	Engineering Mathematics – II
21.	C202	Fluid Mechanics and Machinery
22.	C203	Engineering Thermodynamics
23.	C204	Material and Metallurgical Science (Theory with Practical Components)
24.	C205	Manufacturing Technology – I
25.	C206	Fundamentals of Electrical Drives
26.	C207	Fluid Mechanics and Machinery Lab
27.	C208	Manufacturing Technology Lab – I
28.	C209	Electrical Machines Lab
29.	C210	Career Skill Development Training – I
30.	C211	Environmental Studies
31.	C212	Engineering Mathematics – III
32.	C213	Strength of materials
33.	C214	Thermal Engineering
34.	C215	Theory of Machines – I
35.	C216	Manufacturing Technology – II
36.	C217	Applied Hydraulics and Pneumatics
37.	C218	Strength of Materials Lab

38.	C219	Manufacturing Technology Lab – II
39.	C220	Thermal Engineering Lab
40.	C221	Career Skill Development Training – II
41.	C301	Numerical methods and Statistics
42.	C302	Design of Machine Elements
43.	C303	Heat and Mass Transfer
44.	C304	Theory of Machines – II
45.	C305	Mechanical Measurements and Metrology
46.	C306	***Open Elective – I (Industrial Safety)***
47.	C307	Dynamics and Metrology Lab
48.	C308	Computer Aided Drafting and Machine Drawing Lab drawing Lab
49.	C309	Career Skill Development Training – III **(POM)**
50.	C310	Value Education and Human Rights
51.	C311	Gas Dynamics and Jet Propulsion
52.	C312	Design of Transmission Systems
53.	C313	Industrial Automation
54.	C314	CAD & CAM
55.	C315	Elective – I **(MEMS)**
56.	C316	***Open Elective – II (Energy Management)***
57.	C317	CAD & CAM Lab
58.	C318	Design and Fabrication Project
59.	C319	Career Skill Development Training – IV
60.	C401	Renewable Source of Energy
61.	C402	Mechatronics and Robotics
62.	C403	Computer Integrated Manufacturing
63.	C404	Finite Element Analysis
64.	C405	Production Planning and Control
65.	C406	Elective – II **(Maintenance Engineering)**
66.	C407	Computer Aided Simulation and Analysis Lab
67.	C408	Mechatronics and Robotics Lab
68.	C409	Energy Studies
69.	C410	Project Work

Course Articulation Matrix

The following are the course outcomes

The students will be able to

Course Name: Engineering Mathematics II (C201)

Students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C201.1	K5	**Find** the Fourier series for a function defined on closed interval.
C201.2	K5	**Formulate** and solve PDE of first order.
C201.3	K5	**Formulate** and solve PDE of higher order.
C201.4	K4	**Choose** an appropriate method to solve complex integration.
C201.5	K1	**Identify** problem evaluation techniques in theory of equation.

Course Name: Fluid Mechanics and Machinery (C202)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C202.1	K2	**Explain** the fundamentals of fluid properties and fluid flows.
C202.2	K1	**Use** Euler and Bernoulli's equations for various applications
C202.3	K3	**Apply** dimensional analysis to simple problems
C202.4	K3	**Apply** principles of fluid mechanics to the operation, design, and selection of hydraulics turbines.
C202.5	K4	**Analyz**e the performance of hydraulic pump

Course Name: Engineering Thermodynamics (C203)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C203.1	K2	**Explain** the basic concepts of thermodynamics such as system, state, state postulate,equilibrium, properties, process and cycle.
C203.2	K5	**Demonstrate** the procedures for determining thermodynamic properties of pure substancesfrom tables of property data and calculate the same when two independent properties are known.
C203.3	K5	**Calculate** work in case of a system executing various thermodynamic, processes that involve either ideal gas or pure substance as working fluid.
C203.4	K3	**State and apply** the first law of thermodynamics for a closed and open systems.
C203.5	K3	**State & apply** second law of thermodynamics. State & apply the concept of entropy

Course Name: Material and Metallurgical Science (Theory with practical components) (C204)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C205.1	K1	**Classify** the structure of materials at different levels
C205.2	K1	**Identify** the mechanism of fracture and deformation of crystalline materials.
C205.3	K3	**Apply** material testing and metallography technique for testing industrial components.
C205.4	K2	**Interpret** the concept of phase, phase diagrams & basic terminologies associated withmetallurgy.
C205.5	K2	**Summarize & classify** different heat treatment and surface treatment techniques.

Course Name: Manufacturing Technology I (C205)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C205.1	K1	**Identify** various types and defects in metal casting process.
C205.2	K2	**Compare** different metal joining processes
C205.3	K2	**Explain** various advanced metal joining processes.
C205.4	K2	**Summarize** various hot working and cold working methods of metals
C205.5	K2	**Explain** various sheet metal making processes.

Course Name: Fundamentals of Electrical Drives (C206)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C206.1	K2	**Explain** the concepts of Electrical drives
C206.2	K1	**Discuss** about the characteristics of DC Motors
C206.3	K1	**Describe** the startingmethods of DC and AC motors.
C206.4	K1	**Discuss** about the speed control of DC motors
C206.5	K1	**Discuss** about the speed control of AC Motors

Course Name: Fluid Mechanics and Machinery Lab C207)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C207.1	K5	**Determine** the discharge coefficient for Venture and Orifice meter.
C207.2	K5	**Calculate** the frictional loss through pipes and draw the characteristic curves for pumps.
C207.3	K5	**Evaluate** the performance of turbines and verify Bernoulli's theorem.
C207.4	K2	**Drawing** the characteristic curves of Gear pump/ reciprocating pump
C207.5	K2	**Drawing** the characteristic curves of Pelton turbine / Francis turbine

Course Name: Manufacturing Technology Lab C208)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C208.1	K5	**Make** the work piece as per given shape and size using Lathe, Shaper
C208.2	K6	**Join** two metals using Arc welding.
C208.3	K6	**Join** two metals using Gas welding.
C208.4	K3	**Us**e different moulding tools and patterns
C208.5	K6	**Prepar**e sand mould.

Course Name: Electrical Machines Lab C209)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C209.1	K2	**Determine** characteristics of various electrical drives depending on
C209.2	K6	**Develop** knowledge helpful for application of DC and AC machines.
C209.3	K5	**Perform** speed control of different types of electrical drives.
C209.4	K5	**Perform** different types of testing in electrical dives.
C209.5	K3	**Apply** the procedure to conduct speed control tests on electrical drives

Course Name: Carrer Skill Development (C210)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C210.1	K2	**Acquire knowledge** on English Grammar
C210.2	K2	**Attain knowledge** about analytical skills
C210.3	K2	**Gain knowledge** on logical reasoning.
C210.4	K2	**Facilitate** to set their career goals.
C210.5	K2	**Make** motivational speeches

Course Name: Environmental Studies (C211)

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C210.1	K2	**Examine** all sides of environmental issues and apply understanding from disciplines such as history, economics, psychology, law, literature, politics, sociology, philosophy, and religion to create informed opinions about how to interact with the environment on both a personal and a social level.
C210.2	K1	**Do** independent research on human interactions with the environment.
C210.3	K2	**Apply** lessons from various courses through field experiences. These experiences will allow students to develop a better sense of not only individual organisms, but of the systems in which these organisms live
C210.4	K2	**See** how natural systems and human-designed systems work together, as well as in conflict with each other.
C210.5	K2	**Recognize** the physical, chemical, and biological components of the earth's systems and show how they function.

Course Name: **Engineering Mathematics – III / C212**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C212.1	K3	**Apply** Laplace transform in Engineering.
C212.2	K5	**Evaluate** the Fourier transform of continuous functions.
C2123	K6	**Solve** difference equation by Z- Transform.
C212.4	K3	**Apply** PDE in Engineering
C212.5	K2	**Understand** the concept of logics..

Course Name: **Strength of materials / C213**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C213.1	K5	**Determine** stresses and straining in various axially loaded members.
C213.2	K3	Able to **apply** failure theories in designing engineering systems like bars, beams, thinshells etc
C213.3	K3	**Construct** shear force and bending moment diagrams to estimate the shear stress andbending force respectively in beams.
C213.4	K5	**Estimate** slope and deflection of beams and buckling load in columns.
C213.5	K5	**Determine** the stresses and deformation in shafts and helical springs...

Course Name: **THERMAL ENGINEERING / C214**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C214.1	K3	Students will be able to **identify** and analyze some ideal cycles: e.g. Rankine's cycle, Otto'scycle, Diesel's cycle and the Brayton's cycle, Ideal vapor compression cycles.
C214.2	K3	**Able** to know operational principles and elements of SI and CI engines and also tocalculate performance test.
C214.3	K2	**Understand** the working of different types of steam nozzles and turbines, calculation of performance parameters and methods of turbine compounding to reduce rotor speed of an impulseturbine
C214.4	K2	**Familiarize** with the types of air compressors and governing equations of various forms.
C214.5	K4	**Finalyze** the usage of Refrigeration and Air conditioning...

Course Name: **THEORY OF MACHINES - I / C215**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C215.1	K2	**Understand** the basic concepts of Mechanisms, Machines and their relative motions, then applyit to appropriate environments
C215.2	K4	**Carry out** kinematic analysis (Displacement, Velocity and Acceleration) of simple mechanisms(Single slider Crank Mechanism and four bar Mechanisms) by graphical and analytical method
C215.3	K2	**Construct** & Design different CAM profiles for given conditions using graphical & Theoretical methods
C215.4	K2	**Understand** basic terminologies and apply laws and principles of gears and gear trains
C215.5	K2	**Acquire** knowledge of friction in various mechanical components and apply it in different situations

Course Name: **MANUFACTURING TECHNOLOGY - II / C216**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C216.1	K3	**Apply** theory of metal cutting in machining Process
C216.2	K2	**Illustrate** operational principles of turning machines and its types
C216.3	K3	**Select** manufacturing machines and tools depending upon the need.
C216.4	K3	**Recommend** the types of grinding and broaching machine for finishing process
C216.5	K6	**Design and develop** the manufacturing of mass customized components

Course Name: **APPLIED HYDRAULICS AND PNEUMATICS / C217**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C217.1	K3	**Selec**t hydraulic components for suitable applications
C217.2	K3	**Select** suitable hydraulic control valves for hydraulic circuits
C217.3	K6	**Design** hydraulic circuits by selecting suitable components for a given application
C217.4	K2	**Familiarize** with the pneumatic components and to select proper pneumatic devices forindustrial circuit
C217.5	K6	**Design** different Pneumatic system for simple applications.

Course Name: **MANUFACTURING TECHNOLOGY LAB - II / C219**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C219.1	K3	**Use** different machine tools to manufacturing gears
C219.2	K6	**Modify** the shape of the given work piece using shaper
C219.3	K6	**Ability** to use different machine tools for finishing operations
C219.4	K6	**Ability** to manufacture tools using cutter grinder
C219.5	K6	**Ability** to calculate cutting forces

Course Name: **THERMAL ENGINEERING LAB / C220**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C220.1	K3	**Sketch** the valve timing diagram and port timing diagram for single cylinder four stroke dieselengineand two stroke petrol engines
C220.2	K5	**Measure** the flash and fire point of various fuel/lubricants
C220.3	K5	**Evaluat**e the performance of four stroke single cylinder CI engine
C220.4	K5	**Conduct** a test to find thermal conductivity of various engineering materials.
C220.5	K5	**Measure** heat transfer rate in free and forced convection environment.

Course Name: **CAREER SKILL DEVELOPMENT TRAINING - II / C221**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C221.1	K6	**Increase** their skill of listening, writing and speaking
C221.2	K6	**Increas**e their personality development, mannerisms Skill and attitude.
C221.3	K6	**Increase** their interpersonal relationship.
C221.4	K6	**Increase** their knowledge of verbal and non verbal reasoning.
C221.5	K6	**Increase** their experience of group discussion and mock interviews

Course Name: Numerical methods and Statistics/ C301

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C301.1	K5	**Find** the values of the variables using iterative methods.
C301.2	K5	**Know** the method of finding numerical solution for differential equation by initial valueproblems.
C301.3	K5	**Know** the method of finding numerical solution for differential equation by final value problems.
C301.4	K5	**Solve** the physical problems by small and large sampling theory.
C301.5	K4	**Understand** the method of analysis of variance to solve real world problem.

Course Name: **Design of Machine Elements / C302**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C302.1	K6	**Describe** the fundamental scientific principles of mechanical design (stress, strain, material properties, failure theories, fatigue phenomena, etc.) and their importance and use in design.
C302.2	K5	**Calculate** the diameter based on strength, rigidity and design various types of coupling based on application.
C302.3	K5	**Calculate** the design parameter of permanent and temporary joint on various loading application.
C302.4	K6	**Select** and design a mechanical spring based upon the application and requirements.
C302.5	K5	**Calculate** the design parameter of various types of bearing.

Course Name: **Heat and Mass Transfer/ C303**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C303.1	K2	**Understanding** the physics involved in various heat transfer mechanisms
C303.2	K3	**Applying** the knowledge of mathematics, and analyze the different situations in which heat transfer is involved
C303.3	K4	**To analyze** the effect of different boiling regimes and condensation Andal so through the proper use of modeling can able to choose different heat exchangers for specific applications.
C303.4	K6	**To be able to calculate** heat transfer rate, time required for heating or cooling And obtaining the Temperature distribution with respected domain of analysis under different situations.
C303.5	K3	**Apply** diffusive and convective mass transfer equations and correlations to Solve problems for different applications.

Course Name: **Theory of Machines–II / C304**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C304.1	K4	**Analyze** the static and dynamic force in mechanical systems and determine the energy stored in fly wheel.
C304.2	K6	**Determine** the unbalanced force in reciprocating and rotating mass.
C304.3	K3	**Apply** the fundamental concepts of vibration to determine the natural frequency.
C304.4	K6	**Estimate** the frequency of damped and forced vibrating systems.
C304.5	K6	**Calculate** the speed range of governors and determine the gyroscopic couple.

Course Name: **Mechanical Measurements and Metrology/ C305**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C305.1	K3	**Apply** the knowledge of measuring instruments in industry for selecting appropriate instruments
C305.2	K3	**Suggest** the linear measuring instruments for measuring dimension with high accuracy.
C305.3	K6	**Design** tolerances and fits for selected product quality.
C305.4	K5	**Evaluate** the quality of the machine tool with alignment test.
C305.5	K3	**Utilize** the mechanical measuring instruments in industries for sequence applications.

Course Name: **Dynamics and Metrology Lab / C307**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C307.1	K3	**Choose** the proper measuring instruments for the measurement of pressure,temperature,Linear distance, speed and surface finish etc., using calibration technique.
C307.2	K3	**Identify** the composite error of gear tooth using gear tooth tester.
C307.3	K3	**Demonstrate** the measurement of tool tip temperature, thread components, angularcomponents.
C307.4	K4	**Analyze** various types of transmission, apply balancing in machine systems
C307.5	K4	**Analyze** various types of CAMS and gears.

Course Name: **Computer Aided Drafting and Machine drawing Lab/ C308**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C308.1	K2	**To make** the students understand and interpret drawings of machine components.
C308.2	K6	**To prepare** assembly drawings both manually and using standardCADpackages.
C308.3	K6	**To familiarize** the students with Indian Standards on drawing practices and standard components
C308.4	K6	**To gain** practical experience in handling 2D drafting and 3D modeling software systems.
C308.5	K6	To prepare assembly drawings both manually and using standard CADpackages

Course Name: **Career Skill Development Training–III / C309**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C309.1	K2	**Acquaintance** with the concept of Entrepreneurship Development.
C309.2	K2	**Familiarize** with the Entrepreneur Skills.
C309.3	K2	**Understanding** the Dimensions of Entrepreneurship.
C309.4	K2	**Familiarize** with Emerging Trends and Social Entrepreneurship.
C309.5	K2	**Understanding** the Institutions supporting Entrepreneurs.

Course Name: **GAS DYNAMICS AND JET PROPULSION (C311)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C311.1	K3	Understand the basic concepts of compressible flow and flow behavior in nozzles and diffusers
C311.2	K6	Solve the problems in flow associated with friction and heat transfer
C311.3	K6	Solve the problems in flow associated with shock waves
C311.4	K6	Assess the performance of jet engines
C311.5	K3	Demonstrate the working of different types of rocket engines

Course Name: **DESIGN OF TRANSMISSION SYSTEMS (C312)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C312.1	K3	Make proper assumptions and perform correct analyses and selection of belt drives and chain drives.
C312.2	K3	Find suitable dimensions of spur and helical gear drive for given application.
C312.3	K6	Design of bevel gear, worm gear to suit given loading conditions.
C312.4	K6	Select the number of speeds and design the gears in the gear box.
C312.5	K6	Estimate the dimensions to design clutches and brakes.

Course Name: **INDUSTRIAL AUTOMATION (C313)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C313.1	K2	Identify the different types of sensors used in automation system
C313.2	K3	knowledge about the different forms of control system in real time interfacing
C313.3	K6	Understand the fundamentals of microprocessor-based system design
C313.4	K3	Analyze the operations of programmable logic controllers in automation industries
C313.5	K4	Interpret an interdisciplinary action of Electronics, Electrical, Mechanical and Computer Systems in real time applications

Course Name: **CAD & CAM (C314)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C314.1	K2	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix
C314.2	K2	Describe the use of GT and CAPP for the product development
C314.3	K3	To formulate different type of part programming for Machine element
C314.4	K6	Develop the Group Technology
C314.5	K2	To design and learn about the Two-dimensional machine elements

Course Name: **CAD & CAM LAB (C317)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C317.1	K6	**Create** 3D geometric modeling of industrial components with the use of CAD packages
C317.2	K2	**Do** manual part programming and to machine simple components using CNC machines
C317.3	K6	**Generate** part programming using CAM software
C317.4	K6	**Assess** commercial CAD/CAM tools efficiently, effectively and intelligently in advanced engineering applications
C317.5	K3	**Use** current state-of-the-art CAD/CAM technology in research

Course Name: **DESIGN & FABRICATION PROJECT (C318)**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C318.1	K6	**Identify** the practical problem by conducting literature survey in machining and assembly.
C318.2	K6	**Formulate** proper methodology as per the manufacturing standards available.
C318.3	K6	**Solving** the problem using suitable experimental and analytical studies
C318.4	K6	**Generate** and implement innovative ideas for social benefit
C318.5	K6	**Prepare** a professional report as per recommended format and defend the work

Course Name: **Renewable Source of Energy /** C401

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C401.1	K3	**Assess** the working and applications of solar energy systems.
C401.2	K2	**Understand** wind Energy Conversion Systems and its applications.
C401.3	K3	**Demonstrate** an understanding of bio-energy production and its economics
C401.4	K6	**Develop** an understanding of OTEC, tidal and geothermal energy systems
C401.5	K2	**Identify** the working and applications of new energy systems

Course Name: **Mechatronics and Robotics /** C402

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C402.1	K4	**Select** the proper Sensors.
C402.2	K2	**Know** the various Actuation Systems.
C402.3	K3	**Demonstrate** an expansive view of concepts, parts and dynamic properties of robots
C402.4	K5	**Explore** on the drive systems of robots and end effectors
C402.5	K3	**Apply** the concept of sensory devices

Course Name: **Computer Integrated Manufacturing /** C403

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C403.1	K2	**Understand** the various components of computer integrated manufacturing with theSignificance of communication technologies.
C403.2	K3	**Demonstrate** the usage of computers in the design concept and understand thevarious CAD modeling techniques
C403.3	K2	**Learn** and understand about Group Technology concepts and its significance towards Cellular manufacturing and CAPP
C403.4	K2	**Learn** and appreciate the benefits of Production Planning and Control, Lean Manufacturing and its software
C403.5	K4	**Analyze**, design, and learn about shop floor control, factory data collection andFMS

Course Name: **Finite Element Analysis /** C404

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C404.1	K4	**Formulate** finite element equations and solve the engineering problems
C404.2	K5	**Solve a**nd analyze the one dimensional structural and heat transfer problems fordifferent applications
C404.3	K5	**Evaluate** and analyze the two-dimensional structural problems for different applications
C404.4	K2	**Impart** knowledge on Dynamics problems and free vibration
C404.5	K4	**Formulate** and analyze heat transfer formulation and fluid flow

Course Name: **Production Planning and Control /** C405

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C405.1	K2	**Recognize** the objectives, functions, applications of PPC and forecasting techniques.
C405.2	K5	**Explain** different Inventory control techniques
C405.3	K6	**Solve** routing and scheduling problems
C405.4	K4	**Summarize** various aggregate production planning techniques
C405.5	K2	**Describe** way of integrating different departments to execute PPC functions

Course Name: **Maintenance Engineering (Elective – II)/** C406

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C406.1	K2	**Understand** the principles and functions of maintenance in industry.
C406.2	K3	**Interpret** the various condition based maintenance principles.
C406.3	K3	**Plan** and implement maintenance management systems
C406.4	K2	**Identify** and analyze failures
C406.5	K3	**Synthesize** the functional concepts of reliability and safety engineering

Course Name: **Computer Aided Analysis and Simulation Lab/ C407**

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C406.1	K2	Understand the basic pre-processor, solver and post-processor capabilities of FEA software like ANSYS2021
C406.2	K2	Understand the basic principle of Finite Element Simulations in 1D structural and heat transfer application
C406.3	K6	Solve structural and non-structural problemusing ANSYS ® FEA software
C406.4	K6	Model and simulate structural problems using ANSYS2021
C406.5	K6	Equip them to effectively employ finite element Simulations using software in order to simulate and launch a new engineering component to the market

Course Name **Mechatronics and Robotics Lab /** C408

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C408.1	K6	**Design** a pneumatic / hydraulic system for any innovative ideas
C408.2	K4	**Select** and Use the sensors and actuators in process monitoring systems
C408.3	K6	**Design** and practices for Different mechanical application
C408.4	K6	**Write** Robot programming for Different mechanical application
C408.5	K6	**Programming** for robot application

Course Name: **Energy Studies /** C409

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C409.1	K3	Express the Concept of energy fuels and its usage in electricity.
C409.2	K3	Express the Concept of energy conversion form resources
C409.3	K3	Express the Concept of forms of energy and its scenario.
C409.4	K3	Express the Concept of energy policy at global,state and national level
C409.5	K3	Express the Concept of energy resources,state and national level

Course Name: **Project Work /** C410

The students will be able to

S. No.	Bloom's Taxonomy Level	Statement
C410.1	K3	Apply the knowledge gained in the previous semesters to solve the problems.
C410.2	K4	Conduct literature Survey to gain knowledge about the recent technological Advancements.
C410.3	K2	Realize the concepts use din industries while doing a project
C410.4	K6	Simulate the various mechanical components using different software's
C410.5	K4	Improve better human relationship

Note:

Level	Bloom's Taxonomy	Expansion
Level 1	K1	Remember
Level 2	K2	Understand
Level 3	K3	Apply
Level 4	K4	Analyze
Level 5	K5	Evaluate
Level 6	K5	Create

Note: Eight matrices to be mentioned; one per semester from 1st to 8th semester

CO mapping with POs and PSOs

AY 2022-2023

CO mapping with POs and PSOs

Course Name: **ENGINEERING MATHEMATICS II (C201)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	1	1	2	1	-	-	-	-	-	-	-	-	2	2
C201.2	2	2	2	2	1	-	-	-	-	-	1	-	2	2
C201.3	2	2	2	2	1	-	-	-	-	-	1	-	2	2
C201.4	1	1	2	2	-	-	-	-	-	-	-	-	2	2
C201.5	2	2	1	1	-	1	-	-	-	-	-	-	2	2
C201	**1.60**	**1.60**	**1.80**	**1.60**	**1.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**0.00**	**2.00**	**2.00**

Course Name: **Fluid Mechanics and Machinery(C202)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	2	-	-	-	-	-	-	-	-	-	2	-	-
C202.2	3	2	-	-	-	-	-	-	2	2	-	-	-	-
C202.3	3	3	3	-	-	-	-	-	3	3	-		-	-
C202.4	3	2	2	-	-	-	-	-	2	2	-	2	-	-
C202.5	3	3	2	-	-	-	-	-	2	2	-	2	-	-
C202	**3.00**	**2.20**	**2.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.25**	**2.25**	**0.00**	**2.00**	**0.00**	**0.00**

Course Name: **Engineering Thermodynamics (C203)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C203.2	3	3	2	3	-	-	-	-	-	-	-	-	-	-
C203.3	3	3	-	3	-	-	-	-	-	-	-	-	-	-
C203.4	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C203.5	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C203	**3.00**	**3.00**	**2.00**	**0.00**	**2.00**	**1.00**	**1.00**	**1.25**	**0.00**	**1.00**	**0.00**	**0.00**	**1.00**	**0.00**

Course Name: **Material and Metallurgical Science (C204)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	-	2	-	-	-	-	-	-	-	-	3	2	2
C204.2	3	2	2	2	-	-	-	-	-	-	-	1	2	2
C204.3	3	2	2	-	3	-	-	-	-	-	2	2	2	2
C204.4	3	3	2	-	-	-	1	-	-	-	2	-	2	2
C204.5	3	-	2	-	2	-	-	-	-	-	-	2	2	2
C204	**3.00**	**2.33**	**2.00**	**2.00**	**2.50**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**2.00**	**2.00**

Course Name: **Manufacturing Technology - I (C205)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	-	-	-	-	-	-	-	-	-	2	-	-
C205.2	3	3	2	-	-	-	-	-	2	2	-	2	-	-
C205.3	3	2	2	-	2	-	-	-	2	2	-	2	-	-
C205.4	3	2	-	-	-	-	-	-	2	2	-	2	-	-
C205.5	3	2	-	-	-	-	-	-	2	2	-	2	-	-
C205	**3.00**	**2.40**	**2.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**0.00**	**2.00**	**0.00**	**0.00**

Course Name: **Fundamentals of Electrical Drives (C206)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	2	1	1	-	-	-	-	2	2	2	3	2	2
C206.2	3	2	1	1	-	-	-	-	2	2	2	3	2	2
C206.3	3	2	1	1	-	-	-	-	2	2	2	3	2	2
C206.4	3	1	1	1	-	-	-	-	2	2	2	3	2	2
C206.5	3	1	1	1	-	-	-	-	2	2	2	3	2	2
C206	**3.00**	**1.60**	**1.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**2.00**	**3.00**	**2.00**	**2.00**

Course Name: Fluid Mechanics and Machinery Lab (C207)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	3	3	-	-	-	-	-	-	3	3	-	2	-	-
C207.2	3	3	-	-	-	-	-	-	3	3	-	2	-	-
C207.3	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C207.4	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C207.5	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C207	**2.40**	**2.00**	**1.75**	**1.00**	**2.00**	**2.67**	**1.50**	**0.00**	**1.25**	**0.00**	**1.50**	**1.80**	**1.75**	**1.80**

Course Name: **Manufacturing Technology Lab - I (C208)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	3	-	-	-	-	-	-	3	3	-	2	-	-
C208.2	3	3	-	-	-	-	-	-	3	3	-	2	-	-
C208.3	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C208.4	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C208.5	3	2	-	-	-	-	-	-	2	3	-	2	-	-
C208	**3.00**	**2.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.20**	**2.60**	**0.00**	**2.00**	**1.75**	**1.80**

Course Name: **Electrical Machines Lab (C209)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	2	2	-	-	-	-	-	3	3	2	2	2	2
C209.2	3	2	2	1	-	1	1	-	3	3	2	2	2	2
C209.3	3	2	2	1	-	1	1	-	3	3	2	2	2	2
C209.4	3	2	2	1	-	1	1	-	3	3	2	2	2	2
C209.5	3	2	2	1	-	2	2	-	3	3	2	2	2	2
C209	**3.00**	**2.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.20**	**2.60**	**0.00**	**2.00**	**1.75**	**1.80**

Course Name: **Carrer Skills Development - I (C210)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	2	1	1	2	0	0	0	0	0	0	0	2	0	2
C210.2	2	1	2	2	0	0	0	0	0	0	0	2	2	0
C210.3	1	0	2	2	0	0	0	0	0	0	0	2	0	1
C210.4	2	2	0	2	2	0	0	0	0	0	0	2	0	1
C210.5	2	0	2	2	2	0	0	0	0	0	0	2	0	1
C210	**1.80**	**1.33**	**1.75**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**1.25**

Course Name: **Environmental Studies – Mandatory Course (C211)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	-	1	-	-	-	1	3	1	-	1	-	1	1	1
C211.2	-	1	-	-	-	1	3	1	-	1	-	1	1	1
C211.3	-	1	-	1	-	1	3	1	-	1	-	1	1	1
C211.4	-	1	1	-	-	1	3	1	-	1	-	1	1	1
C211.5	-	1	1	-	-	1	3	1	-	1	-	1	1	1
C211	**0.00**	**1.00**	**1.00**	**1.00**	**0.00**	**1.00**	**3.00**	**1.00**	**0.00**	**1.00**	**0.00**	**1.00**	**1.00**	**1.00**

Course Name**: ENGINEERING MATHEMATICS-III (C212)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	2	1	2	1	-	-	-	-	-	-	-	-	2	-
C212.2	2	1	2	1	-	-	-	-	-	-	-	-	2	-
C212.3	2	1	1	1	2	-	-	-	-	-	-	-		2
C212.4	2	2	2	1	2	1	-	-	-	-	-	-	2	-
C212.5	2	2	2	2	1	1	-	-	-	-	1	-	2	-
C212	**2.00**	**1.40**	**1.80**	**1.20**	**1.67**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**-**	**2.00**	**2.00**

Course Name: **STRENGTH OF MATERIALS (C213)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	2	3	-	2	-	-	-	2	3	2	2
C213.2	3	3	3	2	3	2	2	-	-	-	2	3	2	2
C213.3	3	3	3	2	3	-	2	-	-	-	2	3	2	2
C213.4	3	3	2	2	2	-	2	-	-	-	2	3	2	2
C213.5	3	3	3	2	3	-	2	-	-	-	2	3	2	2
C213	**3.00**	**3.00**	**2.80**	**2.00**	**2.80**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**3.00**	**2.00**	**2.00**

Course Name: THERMAL ENGINEERING (C214)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	3	-	-	-	-	-	-	-	-	-	-	2	2
C214.2	-	-	-	-	-	-	-	-	-	-	-	-	2	1
C214.3	3	3	2	-	2	1	1	-	-	-	-	-	2	2
C214.4	-	-	-	-	-			-	-	-	-	-	1	2
C214.5	3	3	-	-	-	1	1	-	-	-	-	-	1	1
C214	**3.00**	**3.00**	**2.00**	**0.00**	**2.00**	**1.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.60**	**1.60**

Course Name: THEORY OF MACHINES - I (C215)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	3	3	2	3	-	2	-	-	-	2	3	2	1
C215.2	3	3	3	2	3	2	2	-	-	-	2	3	1	1
C215.3	3	3	3	2	3	-	2	-	-	-	2	3	2	-
C215.4	3	3	2	2	2	-	2	-	-	-	2	3	1	2
C215.5	3	3	3	2	3	-	2	-	-	-	2	3	2	-
C215	**3.00**	**3.00**	**2.80**	**2.00**	**2.80**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**3.00**	**1.60**	**1.33**

Course Name: MANUFACTURING TECHNOLOGY - II (C216)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3		3		1	-	-	-	-	-	1	3		2
C216.2	3	2	2	2		-	-	-	-	-	1	1	2	
C216.3	3	2	2	1	3	-	-	-	-	-	2	2	2	
C216.4	3	3	2		1	-	1	-	-	-	2	1	1	1
C216.5	3		2	1	2	-	-	-	-	-	1	2	1	
C216	**3.00**	**2.33**	**2.20**	**1.33**	**1.75**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**	**1.40**	**1.80**	**1.50**	**1.50**

Course Name: APPLIED HYDRAULICS AND PNEUMATICS (C217)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	3	2	2	-	-	-	-	-	-	-	1	3	-	
C217.2	3	2	2	2	-	-	-	-	-	-	2	1	-	2
C217.3	3	2	2	-	3	-	-	-	-	-	2	2	2	-
C217.4	3	3	2	-	-	-	1	-	-	-	2	1	2	2
C217.5	3	3	2	-	2	-		-	-	-	1	2	2	2
C217	**3.00**	**2.40**	**2.00**	**2.00**	**2.50**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**	**1.60**	**1.80**	**2.00**	**2.00**

Course Name: STRENGTH OF MATERIALS LAB (C218)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C218.1	3	1	-	1	-	-	-	-	-	-	-	2	3	-
C218.2	3	1	-	1	-	-	-	-	-	-	-	2	3	-
C218.3	2	1	-	-	-	-	-	-	-	-	-	2	3	-
C218.4	3	1	-	-	-	-	-	-	-	-	-	2	3	-
C218.5	2	1	-	1	-	-	-	-	-	-	-	2	3	-
C218	**2.60**	**1.00**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**3.00**	**0.00**

Course Name: MANUFACTURING TECHNOLOGY LAB - II LAB (C219)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C219.1	2	-	3	-	-	1	1	1	2	-	-	2	-	3
C219.2	1	-	3	-	-	1	1	1	2	-	-	2	-	3
C219.3	2	-	2	-	-	1	1	1	2	-	-	2	-	3
C219.4	2	-	1	-	-	1	1	1		-	-	2	-	3
C219.5	2	-	3	-	-	1	1	1	2	-	-	2	-	3
C219	**1.80**	**0.00**	**2.40**	**0.00**	**0.00**	**1.00**	**1.00**	**1.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.00**

Course Name: THERMAL ENGINEERING LAB (C220)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C220.1	3	3	-	-	-	1	1	1	2	-	-	1	1	-
C220.2	3	3	2		2	1	1	1	2	-	-	1	1	**2**
C220.3	3	3	-	-	-	1	1	1	2	-	-	1	2	-
C220.4	3	3	-	1	-	1	1	1		1	-	-	1	**2**
C220.5	3	3	-	1	2	1	1	1	2	1	-	1	1	-
C220	**3.00**	**3.00**	**2.00**	**1.00**	**2.00**	**1.00**	**1.00**	**1.00**	**2.00**	**1.00**	**0.00**	**1.00**	**1.20**	**2.00**

Course Name: CAREER SKILL DEVELOPMENT TRAINING - II (C221)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C221.1	2	2	2	2	1	2	-	1	3	1	2	2	1	-
C221.2	2	2	2	2	1	2	-	1	3	1	2	2	1	**2**
C221.3	2	2	2	2	1	2	-	1	3	1	2	2	2	-
C221.4	2	2	2	1	2	-	1	3	1	2	2	2	1	**2**
C221.5	2	2	2	2	1	2	-	1	3	1	2	2	1	-
C221	**2.00**	**2.00**	**2.00**	**1.80**	**1.20**	**2.00**	**1.00**	**1.40**	**2.60**	**1.20**	**2.00**	**2.00**	**1.20**	**2.00**

Course Name: NUMERICAL METHODS AND STATISTICS II (C301)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C301.1	2	2	2	2	2	-	-	-	-	-	1	-	-	-
C301.2	2	2	1	1	1	2	-	-	-	-	-	-	-	-
C301.3	2	1	2	2	2	-	-	-	-	-	-	-	-	-
C301.4	1	1	1	1	-	-	-	-	-	-	1	-	-	-
C301.5	2	2	2	1	2	-	-	-	-	-	1	-	-	-
C301	**1.80**	**1.60**	**1.60**	**1.40**	**1.75**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**

Course Name: DESIGN OF MACHINE ELEMENTS (C302)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C302.1	3	2	2	-	-	-	-	2	-	-	-	2	-	-
C302.2	3	2	2	-	-	-	-	2	-	-	-	2	-	-
C302.3	3	2	2	-	-	-	-	2	-	-	-	2	-	-
C302.4	3	2	2	-	-	-	-	2	-	-	-	2	-	-
C302.5	3	2	2	-	-	-	-	2	-	-	-	2	-	-
C302	**3.00**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**

Course Name: HEAT AND MASS TRANSFER (C303)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C303.1	3	2	2	2	-	-	-	2	-	-	-	2	-	-
C303.2	3	2	2	2	-	-	-	2	-	-	-	2	-	-
C303.3	3	2	2	2	-	-	-	2	-	-	-	2	-	-
C303.4	3	2	2	2	-	-	-	2	-	-	-	2	-	-
C303.5	3	2	2	2	-	-	-	2	-	-	-	2	-	-
C303	**3.00**	**2.00**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**

Course Name: THEORY OF MACHINES-II (C304)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C304.1	3	1	3	-	-	-	-	2	-	-	-	-	-	-
C304.2	3	1	3	-	-	-	-	2	-	-	-	-	-	-
C304.3	3	1	3	-	-	-	-	2	-	-	-	-	-	-
C304.4	3	1	3	-	-	-	-	2	-	-	-	-	-	-
C304.5	3	1	3	-	-	-	-	2	-	-	-	-	-	-
C304	**3.00**	**1.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Course Name: MECHANICAL MEASUREMENTS AND METROLOGY (C305)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C305.1	3	-	-	-	-	-	-	-	-	-	1	2	-	-
C305.2	2	-	-	1	-	-	-	-	-	-	1	-	-	-
C305.3	3	3	3	1	-	-	-	-	1	-	2	1	-	-
C305.4	2	2	2	1	2	-	-	-	1	-	1	-	-	-
C305.5	1	-	3	-	3	-	-	-	-	-	2	-	-	-
C305	**2.20**	**2.50**	**2.67**	**1.00**	**2.50**	**0.0**	**0.00**	**0.00**	**1.00**	**0.00**	**1.40**	**1.50**	**0.00**	**0.00**

Course Name: INDUSTRIAL SAFETY (C306) (OE)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C306.1	3	-	-	-	-	-	-	-	-	-	1	2	-	-
C306.2	2	-	-	1	-	-	-	-	-	-	1	-	-	-
C306.3	3	3	3	1	-	-	-	-	1	-	2	1	-	-
C306.4	2	2	2	1	2	-	-	-	1	-	1	-	-	-
C306.5	1	-	3	-	3	-	-	-	-	-	2	-	-	-
C306	**2.20**	**2.50**	**2.67**	**1.00**	**2.50**	**0.0**	**0.00**	**0.00**	**1.00**	**0.00**	**1.40**	**1.50**	**0.00**	**0.00**

Course Name: DYNAMICS AND METROLOGY LAB (C307)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C307.1	2	2	2	2	3	-	-	-	-	-	-	2	-	-
C307.2	2	2	-	-	3	-	-	-	-	-	-	-	-	-
C307.3	2	1	-	-	3	-	-	-	-	-	-	-	-	-
C307.4	2	1	-	1	3	-		-	-	-	-	-	-	-
C307.5	2	1	-	2	3	-		-	-	-	-	-	-	-
C307	**2.00**	**1.40**	**2.00**	**1.67**	**3.00**	**0.0**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**

Course Name: COMPUTER AIDED DRAFTING AND MACHINEDRAWING LAB (C308)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C308.1	3	-	2	-	-	-	-	-	-	-	-	3	-	-
C308.2	3	2	2	2	-	-	-	-	-	-	-	1	-	-
C308.3	3	2	2		3	-	-	-	-	-	2	2	-	-
C308.4	3	3	2	-	-	-	1	-	-	-	2	-	-	-
C308.5	3	3	2	-	-	-	1	-	-	-	2	-	-	-
C308	**3.00**	**2.50**	**2.00**	**2.00**	**3.00**	**0.0**	**1.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**0.00**	**0.00**

Course Name: CARRIER SKILL TRAINING AND DEVELOPMENT III (Principles of Management) (C309)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
C309.1	3	-	-	-	-	-	-	-	-	-	1	2	-	-
C309.2	2	-	-	1	-	-	-	-	-	-	1	-	-	-
C309.3	3	3	3	1	-	-	-	-	1	-	2	1	-	-
C309.4	2	2	2	1	2	-	-	-	1	-	1	-	-	-
C309.5	1	-	3	-	3	-	-	-	-	-	2	-	-	-
C309	**2.20**	**2.50**	**2.67**	**1.00**	**2.50**	**0.0**	**0.00**	**0.00**	**1.00**	**0.00**	**1.40**	**1.50**	**0.00**	**0.00**

Course Name: VALUE EDUCTION AND HUMAN RIGHTS (C310)

COs/POs	PO 1	PO 2	PO3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	P010	P01 1	PO1 2	PSO 1	PSO 2
C310.1	3	-	2	-	-	-	-	-	-	-	-	3	-	-
C310.2	3	2	2	2	-	-	-	-	-	-	-	1	-	-
C310.3	3	2	2		3	-	-	-	-	-	2	2	-	-
C310.4	3	3	2	-	-	-	1	-	-	-	2	-	-	-
C310.5	3	3	2	-	-	-	1	-	-	-	2	-	-	-
C310	**3.00**	**2.50**	**2.00**	**2.00**	**3.00**	**0.0**	**1.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**0.00**	**0.00**

COURSE NAME: GAS DYNAMICS AND JET PROPULSION (C311)

COs/POs	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	2	-	-	-	-	-	-	-	-	-	2	2	2
C311.2	3	3	2	-	-	-	2	-	-	-	-	2	3	3
C311.3	3	3	3	-	-	-	2	-	-	-	-	2	2	2
C311.4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C311.5	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C311	**3.00**	**2.67**	**2.50**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.33**	**2.33**

COURSE NAME: **DESIGN OF TRANSMISSION SYSTEMS (C312)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	3	3	3	3	-	-	-	-	-	1	1	2	3	3
C312.2	3	3	3	3	-	-	-	-	-	1	1	2	3	3
C312.3	3	3	3	3	-	-	-	-	-	1	1	2	3	3
C312.4	3	3	3	3	-	-	-	-	-	1	1	2	3	3
C312.5	3	3	3	3	-	-	-	-	-	1	1	2	3	3
C312	**3.00**	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**1.00**	**2.00**	**3.00**	**3.00**

COURSE NAME: **INDUSTRIAL AUTOMATION (C313)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	2	-	-	-	-	-	-	-	-	-	-	2	3	2
C313.2	3	-	-	-	-	-	-	-	-	-	-	2	3	2
C313.3	3	-	2	1	-	-	-	-	-	-	-	2	3	2
C313.4	3	-	3	1	3	-	-	-	-	2	-	2	3	2
C313.5	2	-	3	-	-	-	-	-	-	-	-	2	3	2
C313	**2.60**	**0.00**	**2.67**	**1.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**2.00**	**3.00**	**2.00**

COURSE NAME: **CAD & CAM (C314)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	-	-	-	-	-	-	-	-	-	-	2	2	3
C314.2	3	-	-	-	-	-	-	-	-	-	-	1	2	3
C314.3	3	-	-	-	2	-	-	-	-	-	-	1	2	3
C314.4	3	-	-	-		-	-	-	-	2	-	1	2	3
C314.5	3	2	1	-	3	-	-	-	-	-	-	2	2	2
C314	**3.00**	**2.00**	**1.00**	**0.00**	**2.50**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**1.40**	**2.00**	**2.00**

COURSE NAME: **MEMS (C315) (E1)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	3	3	-	-	-	-	-	-	-	-	-	2	2	2
C315.2	3	3	-	-	-	-	-	-	-	-	-	2	2	2
C315.3	3	3	-	-	-	-	-	-	-	-	-	2	2	2
C315.4	3	3	-	-	-	-	-	-	-	-	-	2	2	2
C315.5	3	3	-	-	-	-	-	-	-	-	-	2	2	2
C315	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**2.00**

COURSE NAME: **ENERGY MANAGEMENT (C316) (OE)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C316.2	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C316.3	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C316.4	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C316.5	3	3	3	3	-	-	-	-	-	-	-	3	3	3
C316	**3.00**	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.00**	**3.00**	**3.00**

COURSE NAME: **CAD & CAM LAB (C317)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	2	2	1	3	-	-	-	-	-	-	-	3	3
C317.2	3	2	2	-	3	-	-	-	-	-	-	-	3	3
C317.3	2	-	-	-	-	-	-	-	-	-	-	-	3	3
C317.4	3	2	2	1	3	-	-	-	-	-	-	-	3	3
C317.5	3	2	2	-	3	-	-	-	-	-	-	-	3	3
C317	**2.80**	**2.00**	**2.00**	**1.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.00**	**0.00**

COURSE NAME: **DESIGN & FABRICATION PROJECT (C318)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	2	2	2	-	-	-	-	-	-	-	2	3	1
C318.2	3	2	2	-	-	-	-	-	-	-	3	2	3	1
C318.3	3	3	-	2	3	-	-	-	-	3	-	2	3	1
C318.4	3	-	-	-	-	3	3	3		-	-	2	3	1
C318.5	3	2	-	-	-	-	-	-	-	-	3	2	3	1
C318	**3.00**	**2.25**	**2.00**	**2.00**	**3.00**	**3.00**	**3.00**	**3.00**	**0.00**	**3.00**	**3.00**	**2.00**	**3.00**	**1.00**

COURSE NAME**: CARRIER SKILL TRAINING AND DEVELOPMENT (C319) (HVAC)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C319.1	3	3	2	-	-	-	-	-	-	-	-	2	3	3
C319.2	3	3	2	2	-	-	-	-	-	-	-	2	3	3
C319.3	3	3	3	2	-	-	-	-	-	-	-	2	3	3
C319.4	3	3	2	2	-	-	-	-	-	-	-	2	3	3
C319.5	3	3	3	2	-	-	-	-	-	-	-	2	3	3
C319	**3.00**	**3.00**	**2.40**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**3.00**	**3.00**

COURSE NAME: **RENEWABLE SOURCES OF ENERGY (C401)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	-	2	-	-	-	-	-	-	-	1	2	2	2
C401.2	3	2	2	-	-	-	-	-	-	-	1	2	2	2
C401.3	3	-	2	-	-	-	-	-	-	-	1	2	2	2
C401.4	3	-	2	-	-	-	-	-	-	-	1	2	2	2
C401.5	3	-	2	-	-	-	-	-	-	-	1	2	2	2
C401	**3.00**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**	**2.00**	**2.00**	**2.00**

COURSE NAME: **MECHATRONICS AND ROBOTICS(C402)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	-	-	-	-	-	-	-	-	-	-	2	-	-
C402.2	3	-	-	-	-	-	-	-	-	-	-	2	-	-
C402.3	3	-	-	-	-	-	-	-	-	-	-	2	2	2
C402.4	3	2	1	-	3	-	-	-	-	-	-	2	2	2
C402.5	3	2	1	-	-	-	-	-	-	-	-	2	2	2
C402	**3.00**	**2.00**	**1.00**	**0.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**2.00**

COURSE NAME: **COMPUTER INTEGRATED MANUFACTURING (C403)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	-	1	-	-	-	-	-	-	2	-	2	2	2
C403.2	3	2	-	-	3	-	-	-	-	-	-	2	2	2
C403.3	2	-	-	-	-	-	-	2	-	-	-	2	2	2
C403.4	3	2	2	-	3	-	-	-	-	2	-	2	3	3
C403.5	3	2	2	-	-	-	-	-	-	3	-	3	3	3
C403	**2.80**	**2.00**	**1.67**	**0.00**	**3.00**	**0.00**	**0.00**	**2.00**	**0.00**	**2.33**	**0.00**	**2.20**	**2.40**	**2.40**

COURSE NAME: **FINITE ELEMENT ANALYSIS (C404)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	3	3	3	3	3	-	-	-	-	-	-	3	3	3
C404.2	3	3	3	3	3	-	-	-	-	-	-	3	3	3
C404.3	3	3	3	3	3	-	-	-	-	-	-	3	3	3
C404.4	3	3	3	3	3	-	-	-	-	-	-	3	3	3
C404.5	3	3	3	3	3	-	-	-	-	-	-	3	3	3
C404	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.00**	**3.00**	**3.00**

COURSE NAME: **PRODUCTION PLANNING AND CONTROL (C405)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	-	-	-	-	-	-	-	-	-	-	2	1	2
C405.2	2	-	-	-	-	-	-	-	-	2	-	2	1	2
C405.3	3	-	-	-	-	-	-	-	-	2	-	2	1	2
C405.4	3	-	-	-	-	-	-	-	-	2	-	2	1	2
C405.5	3	-	-	-	-	-	-	-	-	2	-	2	1	2
C405	**2.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**2.00**	**1.00**	**2.00**

COURSE NAME: **MAINTENANCE ENGINEERING (C406) (E2)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	3	-	-	-	-	-	-	-	-	2	-	2	2	2
C406.2	3	-	-	-	-	-	-	-	-	2	-	2	2	2
C406.3	3	-	-	-	-	-	-	-	-	2	-	2	2	2
C406.4	3	-	-	-	-	-	-	-	-	2	-	2	2	2
C406.5	3	-	-	-	-	-	-	-	-	2	-	2	2	2
C406	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**2.00**	**2.00**	**2.00**

COURSE NAME: **COMPUTER AIDED SIMULATION AND ANALYSIS LAB (407)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	3	-	-	-	-	-	-	-	3	2	3	3	3
C407.2	3	3	3	3	3	-	-	-	2	3	2	3	3	3
C407.3	3	3	3	3	3	-	-	-	2	3	2	3	3	3
C407.4	3	3	3	3	3	-	-	-	2	3	2	3	3	3
C407.5	3	3	3	3	3	-	-	-	2	3	2	3	3	3
C407	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**2.00**	**3.00**	**2.00**	**3.00**	**3.00**	**3.00**

COURSE NAME: **MECHATRONICS LAB (408)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	-	2	-	-	-	-	-	-	-	1	2	2	3
C408.2	3	2	2	-	-	-	-	-	-	-	1	2	2	3
C408.3	3	-	2	-	-	-	-	-	-	-	1	2	2	3
C408.4	3	-	2	-	-	-	-	-	-	-	1	2	2	3
C408.5	3	-	2	-	-	-	-	-	-	-	1	2	2	3
C408	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**3.00**	**3.00**

COURSE NAME: **ENERGY STUDIES (408) (Mandatory)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	2	2	2	-	-	2	-	-	-	2	-	2	2	2
C409.2	2	2	2	-	-	2	-	-	-	2	-	2	2	2
C409.3	2	2	2	-	-	2	-	-	-	2	-	2	2	2
C409.4	2	2	2	-	-	2	-	-	-	2	-	2	2	2
C409.5	2	2	2	-	-	2	-	-	-	2	-	2	2	2
C409	**2.00**	**2.00**	**2.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**0.00**	**2.00**	**2.00**	**2.00**

Course Name: **PROJECT WORK (C410)**

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1-	PO11	PO12	PSO1	PSO2
C410.1	3	2	2	-	-	-	-	-	-	-	-	3	3	1
C410.2	3	2	2	-	-	-	-	-	-	-	-	3	3	1
C410.3	3	2	2	-	3	3	3	-	-	-	-	3	3	1
C410.4	3	-	3	3	-	-	-	-	-	-	3	3	3	1
C410.5	2	1	-	3	-	2	-	-	-	2	-	3	3	1
C410.1	**2.8**	**1.75**	**2.25**	**3**	**3**	**2.5**	**3**	**-**	**-**	**2**	**3**	**3**	**3**	**1**

Table: Course Articulation Matrix

Note: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

"- " : No Correlation

Program Articulation Matrix

AY 2022-2023

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.00	1.80	1.20	1.60	-	-	1.80	-	1.80	1.80	-	2.00	2.00	2.00
C102	1.60	1.40	1.00	1.00	1.00	1.00	-	-	-	-	-	1.00	-	-
C103	1.00	1.67	1.80	1.25	1.00	1.00	1.00	-	-	-	-	2.00	2.00	2.00
C104	2.00	1.40	1.00	1.25	1.00	1.00	2.00	1.00	-	-	2.50	1.00	-	-
C105	3.00	3.00	1.00	2.00	3.00	-	-	3.00	-	-	-	1.00	-	-
C106	2.50	1.67	2.50	2.00	-	-	-	-	-	-	-	1.00	-	-
C107	3.00	2.00	2.00	2.00	1.00	3.00	3.00	2.00	2.00	2.00	-	1.00	-	-
C108	3.00	2.60	1.20	2.00	3.00	-	-	3.00	2.00	2.00	3.00	1.40	-	-
C109	3.00	-	2.00	-	3.00	2.00	2.00	-	1.00	2.00	1.00	2.00	-	-
C110	1.60	1.80	1.20	1.60	-	-	1.80	-	1.80	1.80	-	-	-	-
C111	2.00	1.40	1.00	1.00	1.00	1.00	-	-	-	-	1.00	1.00	-	-
C112	1.00	1.00	1.80	1.00	-	2.00	1.00	-	-	-	-	2.00	2.00	2.00
C113	1.00	1.00	1.00	1.00	-	1.00	1.00	-	-	-	-	-	-	-
C114	3.00	2.80	2.00	-	-	1.00	-	-	-	-	-	2.00	-	-
C115	3.00	2.25	2.00	2.00	-	1.00	-	-	-	-	-	1.00	-	-
C116	3.00	2.00	1.40	1.00	1.00	1.50	2.00	-	2.00	2.00	-	2.00	-	-
C117	1.40	1.00	1.25	2.00	3.00	-	-	3.00	2.00	2.00	-	1.00	-	-
C118	3.00	2.33	2.00	1.67	3.00	1.50	2.00	-	1.00	2.00	3.00	1.40	-	-
C119	3.00	3.00	1.00	1.00	-	1.33	1.60	-	3.00	3.00	1.00	1.00	1.50	1.00
C201	1.60	1.60	1.80	1.60	1.00	1.00	-	-	-	-	1.00	-	2.00	2.00
C202	3.00	2.20	2.33	-	-	-	-	-	2.25	2.25	-	2.00	-	-
C203	3.00	3.00	2.00	-	2.00	1.00	1.00	1.25	-	1.00	-	-	1.00	-
C204	3.00	2.33	2.00	2.00	2.50	-	1.00	-	-	-	2.00	2.00	2.00	2.00
C205	3.00	2.40	2.00	-	2.00	-	-	-	2.00	2.00	-	2.00	3.00	3.00
C206	3.00	1.60	1.00	1.00	-	-	-	-	2.00	2.00	2.00	3.00	2.00	2.00
C207	2.40	2.00	1.75	1.00	2.00	2.67	1.50	-	1.25	-	1.50	1.80	1.75	1.80
C208	3.00	2.40	-	-	-	-	-	-	2.20	2.60	-	2.00	1.75	1.80
C209	3.00	2.40	-	-	-	-	-	-	2.20	2.60	-	2.00	1.75	1.80
C210	2.40	2.00	1.75	1.00	2.00	2.67	1.50	-	1.25	-	1.50	1.80	1.75	1.80
C211	-	1.00	1.00	1.00	-	1.00	3.00	1.00	-	1.00	-	1.00	1.00	1.00
C212	2.00	1.40	1.80	1.20	1.67	1.00	-	-	-	-	1.00	-	2.00	2.00
C213	3.00	3.00	2.80	2.00	2.80	2.00	2.00	-	-	-	2.00	3.00	2.00	2.00
C214	3.00	3.00	2.00	-	2.00	1.00	1.00	-	-	-	-	-	1.60	1.60
C215	3.00	3.00	2.80	2.00	2.80	2.00	2.00	-	-	-	2.00	3.00	1.60	1.33
C216	3.00	2.33	2.20	1.33	1.75	-	1.00	-	-	-	1.40	1.80	1.00	3.00
C217	3.00	2.40	2.00	2.00	2.50	-	1.00	-	-	-	1.60	1.80	1.00	3.00
C218	3.00	2.40	-	-	-	-	-	-	2.40	3.00	-	2.00	-	-
C219	1.80	-	2.40	-	-	-	-	-	-	-	-	-	-	3.00
C220	2.00	1.40	1.80	1.20	1.67	1.00	-	-	-	-	1.00	-	2.00	2.00
C221	2.40	2.00	1.75	1.00	2.00	2.67	1.50	-	1.25	-	1.50	1.80	1.75	1.80
C301	2.40	1.60	1.60	1.50	1.75	2.00	-	-	-	-	1.00	-	2.00	2.00
C302	3.00	2.00	2.00	-	-	-	-	2.00	-	-	-	2.00	2.00	1.00
C303	3.00	2.00	2.00	2.00	-	-	-	2.00	-	-	-	2.00	-	-
C304	3.00	1.00	3.00	-	-	-	-	2.00	-	-	-	-	-	-

C305	2.20	2.50	2.67	1.00	2.50	-	-	-	1.00	-	1.40	1.50	-	-
C306	2.20	2.50	2.67	1.00	2.50	-	-	-	1.00	-	1.40	1.50	2.00	2.00
C307	2.00	1.40	2.00	1.67	3.00	-	-	-	-	-	-	2.00	2.00	-
C308	3.00	2.20	2.00	0.40	0.75	-	-	-	-	-	2.00	2.00	1.00	3.00
C309	1.60	1.40	1.00	1.25	1.00	1.00	1.00	-	1.00	1.50	-	-	-	1.00
C310	2.20	2.50	2.67	1.00	2.50	-	-	-	1.00	-	1.40	1.50	-	-
C311	3.00	2.67	2.50	-	-	-	2.00	-	-	-	-	2.00	2.33	2.33
C312	3.00	3.00	3.00	3.00	-	-	-	-	-	1.00	1.00	2.00	1.00	3.00
C313	2.60	-	2.67	1.00	3.00	-	-	-	-	2.00	-	2.00	3.00	3.00
C314	3.00	2.00	1.00	-	2.50	-	-	-	-	2.00	-	1.40	1.00	3.00
C315	3.00	3.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
C316	1.60	1.40	1.00	1.25	1.00	1.00	1.00	-	1.00	1.50	-	-	-	1.00
C317	3.00	2.60	2.60	3.00	2.75	-	1.00	-	1.00	2.00	2.00	2.00	1.00	3.00
C318	2.00	2.60	1.40	1.80	2.00	2.00	2.00	-	3.00	1.00	1.40	3.00	1.00	1.00
C319	3.00	3.00	2.40	2.00	-	-	-	-	-	-	-	2.00	3.00	3.00
C401	3.00	2.00	2.00	-	-	-	-	-	-	-	1.00	2.00	2.00	2.00
C402	3.00	2.00	1.00	-	1.00	-	-	-	-	-	-	2.00	3.00	1.00
C403	2.80	2.00	1.67	-	3.00	-	-	2.00	-	2.00	-	2.20	1.00	3.00
C404	3.00	3.00	3.00	3.00	3.00	-	-	-	-	-	-	3.00	3.00	3.00
C405	2.60	-	-	-	-	-	-	-	-	2.00	-	2.00	1.00	2.00
C406	3.00	-	-	-	-	-	-	-	-	2.00	-	2.00	2.00	2.00
C407	3.00	3.00	3.00	3.00	3.00	-	-	-	2.00	3.00	2.00	3.00	1.00	3.00
C408	3.00	3.00	3.00	3.00	3.00	-	-	-	2.00	3.00	2.00	3.00	3.00	1.00
C409	2.00	2.00	2.00	-	-	2.00	-	-	-	2.00	-	2.00	2.00	2.00
C410	1.8	2.6	2.6	2.2	2.4	1.2	1.2	1	1.8	2	1.8	2	1	3
Average	**2.54**	**2.14**	**1.90**	**1.60**	**2.10**	**1.52**	**1.57**	**1.94**	**1.72**	**2.00**	**1.61**	**1.88**	**1.80**	**2.09**

Table: Program Articulation Matrix

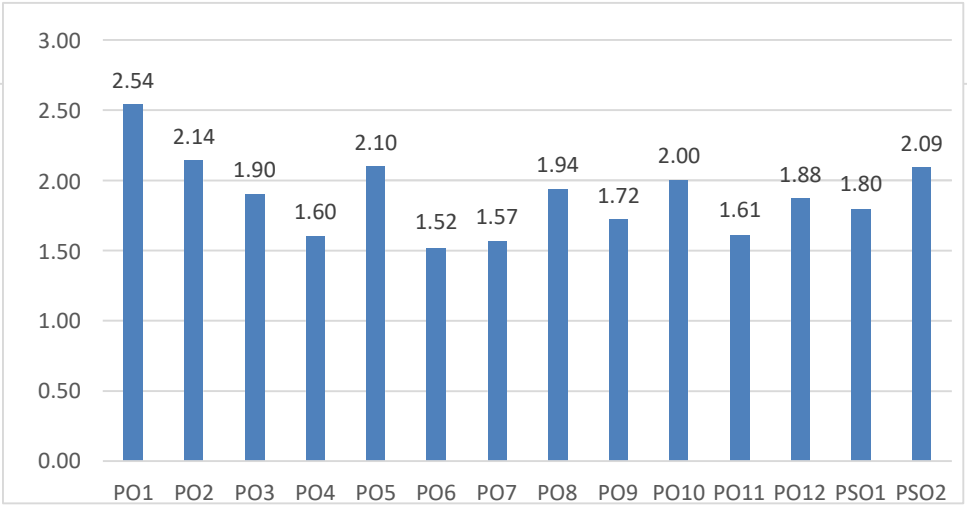

Figure: Program level Course - POs and PSOs Matrix

Attainment of Course Outcomes

AY 2022-2023

Attainment of Course Outcomes

Describe the assessment processes used to gather the data upon whichthe Evaluation of Course Outcome is based

In the Outcome Based Education (OBE), assessment is done through more than one processes and assessed by the course coordinator at the end of the semester.

CO Assessment Processes

Assessment tools are categorized into two methods to assess the course outcomes as:

(i) Direct methods

(ii) Indirect methods

- Direct methods display the student's knowledge and skills from their performance in the continuous internal assessment examinations, end semester examinations, assignments / seminars, multiple choice questions and class tests etc. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.
- Indirect methods such as students exit feedback, Alumni and employer's surveys are reflecting on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills and their valued by different stakeholders.

Direct Assessment Methods		
S. No.	**Direct Assessment**	**Method Description**
1	Internal Assessment for Theory Examinations	Three continuous assessment tests are conducted for the assessment of the students' performance
2	Assignments	Outcome based quality assignments are given to the students
3	Co-curricular activities	Students are encouraged to participate more in co-curricular activities conducted in our and other institutions and industries
4	Internal Assessment for Laboratory Examinations	In laboratory course, the internal assessment marks shall be based on the laboratory records and model practical examination. Mini projects are introduced in the laboratory courses to improve the students' technical skills and practical exposure
5	Recording observations	Students are asked to record the observations regarding the understating, conduction and result analysis of the experiments in the observation note books
6	End Semester Examinations (Theory and Laboratory)	Once in semester examinations are conducted by the college at the end of each semester.
7	Project Work Viva-Voce	Viva-Voce examination of project work shall be conducted batch-wise.

Table Direct Assessment Methods

Indirect Assessment Methods		
S. No.	**Indirect Assessment**	**Method Description**
1	Students Exit Survey	Information is collected from the students about their satisfaction with respect to academic activities and co-curricular and extracurricular activities.
2	Alumni Survey	Collect variety of information about program Satisfaction and service offered by the college.
3	Employer's Survey	Survey is conducted during the placement officer visit to industry & during employer visit to the campus for campus interviews information about the graduates' skills, capabilities and Opportunities

Table. Indirect Assessment Methods

Internal Assessment Examinations and Evaluation Process (Regulations R-2018)

Theory courses:

For theory courses out of 100 marks, the internal mark is fixed as 40 and End Semester Examination carries 60 marks. The total marks obtained in three continuous assessment tests put together shall be reduced to 15 marks.5 marks are awarded to student attendance and 5 marks are awarded for assignments / seminar.5 marks are awarded to class tests and 10 marks are awarded to the multiple-choice questions.

Practical courses:

For laboratory courses out of 100 marks, the internal is fixed as 50 and End Semester Examination carries 50 marks. The assessment test and model test are conducted to award student assessment marks.

Project work:

For Project work out of 100 marks, the internal mark is fixed as 50 and the End Semester Examinations (project report evaluation and viva-voce examination) carries 50 marks.

Range of marks	Grade point	Letter grade (R 2018)
100	10	S
81-90	9	A
71-80	8	B
61-70	7	C
57-60	6	D
50-56	5	E
<50	0	U

Table. End semester Examinations Range of Marks

Record the attainment of Course Outcomes of all courses with respect toset Attainment levels

Evaluation of internal and external examination marks for setting Course attainment levels for all courses:

Evaluation of marks from both internal and external examinations

Academic Year	Regulation	Semesters	Internal	End Semester Examinations	Total marks
2021-2022	R- 2018	Semester – I to VIII	40	60	100

Table: Evaluation of marks from both internal and external examinations

Measurement of Course attainment levels for End Semester Examinations:

For Regulations R-2018, 50% of marks are considered as pass marks. The attainment level is same for all the students considered for the evaluation of course outcome.

The various attainment levels for R-2018are given below:

Attainment Level1 (Low) : 55% to 64 % of students scoring pass marks.

Attainment Level2 (Moderate): 65% to 74% of students scoring pass marks.

Attainment Level3 (High) : 75% to 100% of students scoring pass marks.

Measurement of Course attainment levels for Internal Assessment Examinations:

For Regulations R-2018, 50% of marks are considered as pass marks. The attainment level is same for all the students considered for the evaluation of course outcome.

The various attainment levels for R-2018 are given below:

55% OF STUDENT ABOVE 50% - 1 (LOW)

65% OF STUDENT ABOVE 50% - 2 (MED)

75% OF STUDENT ABOVE 50% - 3 (HIGH)

Overall course attainment for first year courses:

Course Code	Internal Attainment	Internal Attainment (40%)	External Attainment	External Attainment (60%)	Total Attainment
C101	2.76	1.10	1.87	1.12	2.22
C102	1.84	0.74	1.83	0.92	2.10
C103	1.62	0.65	1.40	0.84	1.49
C104	2.68	1.07	1.60	0.96	2.03
C105	2.48	0.99	2.87	1.72	2.71
C106	2.92	1.17	2.67	1.60	2.77
C107	1.30	0.65	1.15	0.50	1.15
C108	1.35	0.68	2.23	1.00	1.68
C109	1.60	0.80	2.70	1.00	1.80
C110	1.72	0.69	1.07	0.64	1.33
C111	2.64	1.06	1.73	1.04	2.10
C112	2.82	1.12	1.80	1.72	1.84
C113	2.80	1.12	1.40	0.84	1.96
C114	1.92	0.77	0.93	0.56	1.33
C115	2.24	0.9	0.53	.32	1.22
C116	2.24	0.9	0.53	.32	1.22
C117	1.67	0.5	1.73	0.5	1.62
C118	1.82	0.5	1.86	0.5	1.68
C119	1.73	0.5	1.84	0.5	1.23
Table: Overall course attainment for first year courses					

Overall course attainment for second year courses:

Course	Internal Attainment	Internal Attainment (40%)	External Attainment	External Attainment (60%)	Total Attainment
C201	2.8	1.12	2.67	1.60	2.72
C202	2.72	1.088	2.2	1.32	2.41
C203	2.76	1.104	2.73	1.64	2.74
C204	3	1.2	1.93	1.16	2.36
C205	2.76	1.104	1.93	1.16	2.26
C206	3	1.2	2.6	1.56	2.76
C207	3	1.2	3	1.80	3.00
C208	3	1.2	3	1.80	3.00
C209	2.75	1.1	3	1.80	2.90
C210	2.45	0.98	2.65	1.59	2.57
C211	1.43	0.572	2.33	1.40	1.97
C212	3	1.2	3	1.80	3.00
C213	3	1.2	3	1.80	3.00
C214	3	1.2	3	1.80	3.00
C215	3	1.2	3	1.80	3.00
C216	3	1.2	2.87	1.72	2.92
C217	3	1.2	3	1.80	3.00
C218	3	1.2	3	1.80	3.00
C219	3	1.2	3	1.80	3.00
C220	3	1.2	3	1.80	3.00
C221	3	1.2	3	1.80	3.00

Table: Overall course attainment for second year courses

Overall course attainment for third year courses:

Course	Internal Attainment	Internal Attainment (40%)	External Attainment	External Attainment (60%)	Total Attainment
C301	2.92	1.168	3	1.80	2.97
C302	3	1.2	3	1.80	3.00
C303	3	1.2	3	1.80	3.00
C304	3	1.2	3	1.80	3.00
C305	2.96	1.184	3	1.80	2.98
C306	3	1.2	3	1.80	3.00
C307	3	1.2	3	1.80	3.00
C308	3	1.2	3	1.80	3.00
C309	3	1.2	3	1.80	3.00
C310	2.96	1.184	3	1.80	2.98
C311	1.38	0.552	3	1.80	2.35
C312	0.86	0.344	3	1.80	2.14
C313	1.94	0.776	3	1.80	2.58
C314	1.22	0.488	3	1.80	2.29
C315	0.58	0.232	3	1.80	2.03
C316	0.42	0.168	1.8	1.08	1.25
C317	1.5	0.6	3	1.80	2.40
C318	1.5	0.6	3	1.80	2.40
C319	3	1.2	3	1.80	3.00

Table: Overall course attainment for Third year courses

Overall course attainment for final year courses:

Course	Internal Attainment	Internal Attainment (40%)	External Attainment	External Attainment (60%)	Total Attainment
C401	3	1.2	3	1.80	3.00
C402	3	1.2	3	1.80	3.00
C403	3	1.2	3	1.80	3.00
C404	3	1.2	3	1.80	3.00
C405	3	1.2	3	1.80	3.00
C406	3	1.2	2.93	1.76	2.96
C407	3	1.2	3	1.80	3.00
C408	3	1.2	3	1.80	3.00
C409	3	1.2	2.87	1.72	2.92
C410	3	1.2	3	1.80	3.00

Table: Overall course attainment for final year courses

Attainment of Program Outcomes and Program Specific Outcomes

AY 2022-2023

Attainment of Program Outcomes and Program Specific Outcomes

Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcome

Program Outcome Assessment Weight age:

Assessment Tool	Assessment Methods	Weightage1 in %	Weightage2 in %
Direct Method	Continuous Assessment Examinations	40%	80%
	End Semester Examinations	60%	
Indirect Method	Program Exit Survey	6.66%	20%
	Alumni Survey	6.66%	
	Employer's Survey	6.66%	

Table: Program Outcome Assessment Weight age

The detailed assessment process of POs is shown in Figure.

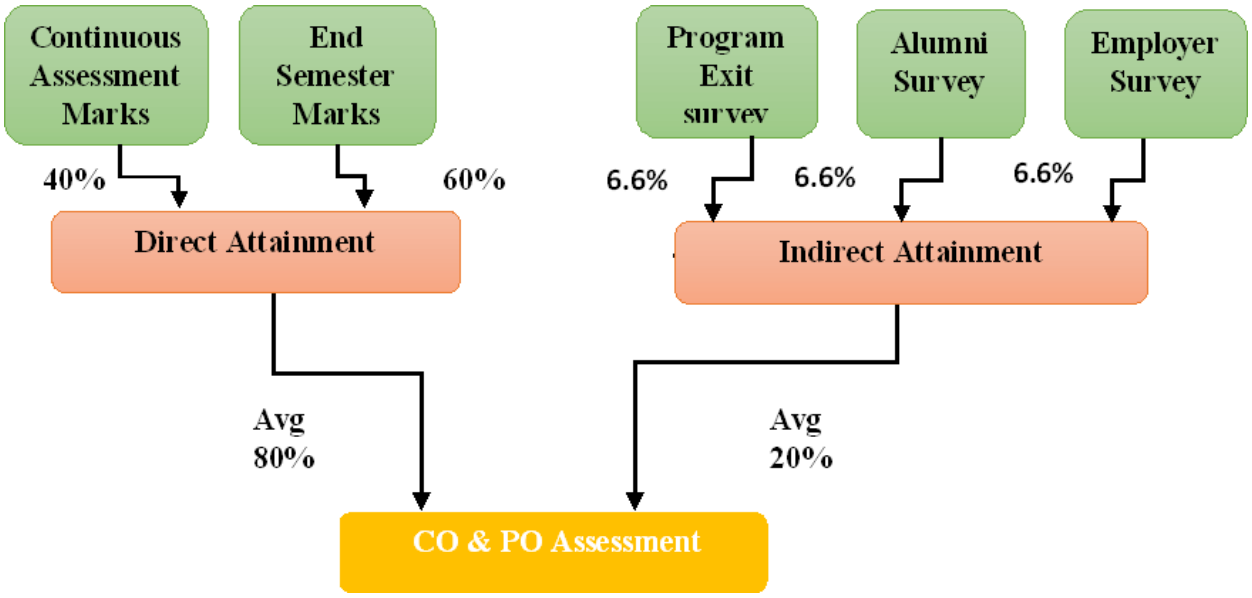

Figure: Assessment Processes of POs

Assessment of the attainment of Program Outcomes

Evaluation with Indirect Assessment Tools

1. **Program Exit Survey on POs & PSOs**

POs/ PSOs	Questionnaire(s)	Excellent (4)	Good (3)	Average (2)	Fair (1)	Total Weightage	Percentage	Weightage for 3 Point scale
PO1	Apply knowledge of mathematics, physical sciences and Electrical and Electronics Engineering fundamentals	22	13	4	0	135	87%	2.60%
PO2	Able to identify, formulate, analyze and solve Electrical and Electronics Engineering problems	17	18	4	0	128	82%	2.46%
PO3	Able to design and realize Electrical and Electronics to meet desired needs within practical constraints such as economical, environmental, social, political, ethical, health and safety, manufacturability and sustainability	22	14	3	0	132	85%	2.54%
PO4	Able to investigate and conduct experiments, as well as to analyze and interpret data	20	17	2	0	135	87%	2.60%
PO5	Use of techniques, skills, and modern engineering tools necessary for engineering practice	18	17	4	0	131	84%	2.52%
PO6	Contextual knowledge to assess societal, health, safety, legal and cultural issues related to Engineering	19	20	0	0	136	87%	2.62%
PO7	Realize the impact of Electronics and Communication engineering solutions in a global, economic and environmental context	23	14	2	0	138	88%	2.65%
PO8	Apply ethical principles and commitment to professional ethics and responsibility	21	14	4	0	134	86%	2.58%
PO9	Function as an individual and as a member or leader in multidisciplinary teams.	20	17	2	0	135	87%	2.60%

PO10	Communicate effectively with the engineering community and society at large	26	10	3	0	140	90%	2.69%
PO11	Knowledge and understanding of management and business practices and their limitations	24	14	1	0	140	90%	2.69%
PO12	Recognize the need for, and have the ability to engage in life-long learning	28	9	2	0	139	89%	2.67%
PSO1	To Prepare Mechanical Engineering Graduates with an outstanding knowledge of industrial automation for a successful career	20	16	3	0	134	86%	2.58%
PSO2	To develop an ability to accept global challenges and apply engineering knowledge for solving various problem in the area of mechanical engineering using computer aided engineering.	23	14	2	0	138	88%	2.65%
Overall Percentage						**1895**	**87%**	**2.60%**

Table: Students Exit Survey on POs & PSOs

2. Employer Survey on POs & PSOs

POs/ PSOs	Questionnaire(s)	Excellent (4)	Good (3)	Average (2)	Fair (1)	Total Weightage	Percentage	Weightage for 3 Point scale
PO1	Demonstration of Engineering knowledge and skills	15	3	2	0	73	91%	2.74%
PO2	Exhibition of Problem-solving skillsin respective area of specialization	17	2	1	0	76	95%	2.85%
PO3	Demonstration of Design and development skills for complex problems	18	1	1	0	77	96%	2.89%
PO4	Display of investigations skills on complex problems	14	4	2	0	72	90%	2.70%
PO5	Implementation and usage of technologies learned, modern tools	15	3	2	0	73	91%	2.74%
PO6	Demonstration of contextual knowledge by the graduate	13	6	1	0	76	95%	2.85%
PO7	Demonstration of the impact of professional engineering solutions in societal and environmental context	17	3	0	0	77	96%	2.89%

PO8	Follow up ethical behavior by the graduate	15	4	1	0	74	93%	2.78%
PO9	Ability of displaying managerial skills and leadership qualities	18	1	1	0	77	96%	2.89%
PO10	Effective communication to others and improve teamwork, problem solving skills	16	2	2	0	74	93%	2.78%
PO11	Involvement in the project management and financial activities	15	4	1	0	74	93%	2.78%
PO12	Aptitude shown towards lifelong learning by the graduate	12	6	2	0	70	88%	2.63%
PSO1	To Prepare Mechanical Engineering Graduates with an outstanding knowledge of industrial automation for a successful career	15	4	1	0	74	93%	2.78%
PSO2	To develop an ability to accept global challenges and apply engineering knowledge for solving various problem in the area of mechanical engineering using computer aided engineering	13	5	2	0	71	89%	2.66%
Overall Percentage						**1038**	**93%**	**2.78%**

Table: Employer's Survey on POs & PSOs

3. Alumni Survey on POs& PSOs

POs/ PSOs	Questionnaire(s)	Excellent (4)	Good (3)	Average (2)	Fair (1)	Total Weightage	Percentage	Weightage for 3 Point scale
PO1	How competent are you in the application of the Basic Engineering Knowledge?	25	19	6	0	169	85%	2.54%
PO2	How good is your ability in identifying, formulating, and solving engineering problems?	32	16	2	0	180	90%	2.70%
PO3	How do you rate your ability to apply principles of engineering design?	27	20	3	0	174	87%	2.61%
PO4	How do you rate your ability to analyze data, interpret them and make use of the data for design?	36	13	1	0	185	93%	2.78%
PO5	How do you rate your ability to use modern tools?	28	19	3	0	175	88%	2.63%

PO6	How do you apply of the society issues that have to be considered while providing engineering solutions?	39	10	1	0	188	94%	2.82%
PO7	How do you rate your understanding of the social and global issues that have to be considered while providing engineering problems?	24	25	1	0	173	87%	2.60%
PO8	How do you rate your understanding of the ethical and professional responsibilities?	28	17	5	0	173	87%	2.60%
PO9	How do you rate your ability to function on teams?	30	16	4	0	176	88%	2.64%
PO10	How can you rate your oral communication and presentation skills?	36	14	0	0	186	93%	2.79%
PO11	How effective is your management skills and finance oriented?	33	15	2	0	181	91%	2.72%
PO12	How do you rate your understanding of the need for and the ability to engage in life-long learning?	28	18	4	0	174	87%	2.61%
PSO1	To Prepare Mechanical Engineering Graduates with an outstanding knowledge of industrial automation for a successful career	29	17	4	0	175	88%	2.63%
PSO2	To develop an ability to accept global challenges and apply engineering knowledge for solving various problem in the area of mechanical engineering using computer aided engineering	32	16	2	0	180	90%	2.70%
Overall Percentage						**2489**	**89%**	**2.67%**

Table: Alumni Survey on POs & PSOs

Indirect Attainment	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Students Exit Survey	2.5	2.46	2.54	2.6	2.52	2.62	2.65	2.58	2.6	2.69	2.69	2.67	2.58	2.65
Employer Survey	2.74	2.85	2.89	2.7	2.74	2.85	2.89	2.78	2.89	2.78	2.78	2.63	2.78	266
Alumni Survey	2.54	2.7	2.61	2.78	2.63	2.82	2.6	2.6	2.64	2.79	2.72	2.61	2.63	2.7
Total (3)	**2.59**	**2.67**	**2.68**	**2.69**	**2.63**	**2.76**	**2.71**	**2.65**	**2.71**	**2.75**	**2.73**	**2.64**	**2.66**	**2.67**

Table: Indirect Attainment Level with POs & PSOs

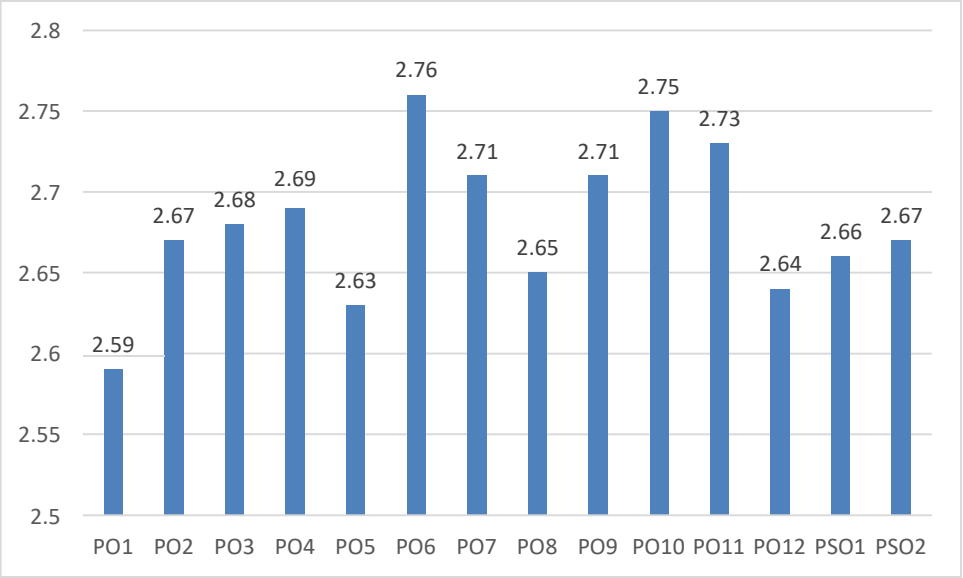

Figure Mapping of Indirect Attainment Level with POs & PSOs

Provide results of evaluation of each PO &PSO

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course-PO&PSO matrices as indicated).

POs Attainment

POs attainment level will be 80% of direct assessment + 20% of indirect assessment

Overall POs & PSOs attainment calculation

Overall attainment = 80% of Direct attainment + 20% of Indirect attainment

= (0.8 x Direct attainment) + (0.2 x Indirect attainment)

Direct attainment = (0.2 x Internal exam attainment level) + (0.8 x End semester exam attainment level)

Direct attainment calculation

Actual attainment = 20% of Internal exam attainment + 80% of End Semester Exam attainment

Average CO of corresponding PO is 3, A = Actual attainment * 3/3

Average CO of corresponding PO is 2, A = Actual attainment * 2/3

Average CO of corresponding PO is 1, A = Actual attainment * 1/3

Direct attainment = 80% of A = 0.8 * A

Indirect attainment, IDA = 0.2 * Exit Survey on PO attainment

Overall attainment **= 0.8% Direct attainment + 0.2 % Indirect attainment**

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.46	-	2.52	2.84	2.84	-	-	-	-	2.84	-	2.84	2.84	2.84
C102	1.34	1.18	1.68	1.68	1.68	1.68	-	-	-	-	-	1.68	-	-
C103	0.58	-	0.60	0.67	0.67	-	-	-	-	0.67	-	0.67	0.67	0.67
C104	2.74	1.92	2.74	1.72	2.74	2.74	1.83	2.74	-	-	2.29	2.74	-	-
C105	2.78	2.78	2.78	2.78	2.78	-	-	2.78	-	-	-	2.78	-	-
C106	2.35	2.35	2.35	2.82	-	-	-	-	-	-	-	2.82	-	-
C107	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	-	2.13	-	-
C108	2.70	2.34	1.62	2.70	2.70	-	-	2.70	2.70	2.70	2.70	1.26	-	-
C109	3.00	-	3.00	-	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	-	-
C110	2.30	2.59	1.73	2.30	-	-	2.59	-	2.59	2.59	-	-	-	-
C111	1.48	1.04	1.48	1.48	1.48	1.48	-	-	-	-	1.48	1.48	-	-
C112	0.59	-	0.60	0.68	0.68	-	-	-	-	0.68	-	0.68	0.68	0.68
C113	2.90	2.90	2.90	2.90	-	2.90	2.90	-	-	-	-	-	-	-
C114	1.94	1.81	1.94	-	-	1.94	-	-	-	-	-	1.94	-	-
C115	2.89	2.17	2.89	1.93	-	2.89	-	-	-	-	-	2.89	-	-
C116	2.30	1.84	1.97	-	-	2.30	-	-	-	-	-	2.30	-	-
C117	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	-	2.18	-	-
C118	2.68	2.32	1.61	2.68	2.68	-	-	2.68	2.68	2.68	2.68	1.25	-	-
C119	2.65	2.65	2.65	2.65	-	1.77	2.12	-	2.65	2.65	2.65	2.65	1.99	2.65
C201	2.18	2.18	2.45	2.18	2.72	2.72	-	-	-	-	2.72	-	2.72	2.72
C202	2.37	1.74	1.84	-	-	-	-	-	1.78	1.78	-	2.37	-	-
C203	2.22	2.22	2.22	-	2.22	2.22	2.22	1.39	-	2.22	-	-	-	-
C204	2.36	1.84	2.36	2.36	1.97	-	2.36	-	-	-	2.36	1.57	2.36	2.36
C205	2.26	1.81	2.26	-	2.26	-	-	-	2.26	2.26	-	2.26	2.26	2.26
C206	2.76	2.21	2.76	2.76	-	-	-	-	2.76	2.76	2.76	2.76	2.76	2.76
C207	2.40	2.00	1.75	3.00	3.00	2.67	2.25	-	1.88	-	2.25	2.70	1.75	1.80
C208	3.00	2.40	-	-	-	-	-	-	2.20	2.60	-	3.00	1.75	1.80
C209	3.00	2.40	-	-	-	-	-	-	2.20	2.60	-	3.00	1.75	1.80
C210	2.40	2.00	1.75	3.00	3.00	2.67	2.25	-	1.88	-	2.25	2.70	1.75	1.80
C211	--	1.94	1.94	1.94	-	1.94	1.94	1.94	-	1.94	-	1.94	1.94	1.94
C212	3.00	2.10	2.70	1.80	2.50	3.00	-	-	-	-	3.00	-	3.00	3.00
C213	3.00	3.00	2.80	3.00	2.80	3.00	3.00	-	-	-	3.00	3.00	3.00	3.00
C214	3.00	3.00	3.00	-	3.00	3.00	3.00	-	-	-	-	-	2.40	2.40
C215	2.92	2.92	2.73	2.92	2.73	2.92	2.92	-	-	-	2.92	2.92	2.34	1.95
C216	3.00	2.33	2.20	2.00	1.75	-	3.00	-	-	-	2.10	1.80	2.25	2.25
C217	3.00	2.40	3.00	3.00	2.50	-	3.00	-	-	-	2.40	1.80	3.00	3.00
C218	3.00	2.40	-	-	-	-	-	-	2.40	3.00	-	3.00	-	-
C219	2.70	-	2.40	-	-	-	-	-	-	-	-	-	-	3.00
C220	3.00	2.10	2.70	1.80	2.50	3.00	-	-	-	-	3.00	-	3.00	-
C221	2.40	2.00	1.75	3.00	3.00	2.67	2.25	-	1.88	-	2.25	2.70	1.75	1.80
C301	2.37	2.37	2.37	2.23	2.60	2.97	-	-	-	-	2.97	-	2.97	2.97
C302	3.00	3.00	3.00	-	-	-	-	3.00	-	-	-	3.00	3.00	3.00
C303	3.00	3.00	3.00	3.00	-	-	-	3.00	-	-	-	3.00	-	-
C304	3.00	3.00	3.00	-	-	-	-	3.00	-	-	-	-	-	-
C305	2.19	2.49	2.65	2.98	2.49	-	-	-	2.98	-	2.09	2.24	-	-
C306	2.79	2.74	2.98	-	2.19	-	2.98	-	2.98	-	2.98	-	-	2.98

C307	3.00	2.10	3.00	2.50	3.00	-	-	-	-	-	-	3.00	3.00	-
C308	3.00	2.20	3.00	0.60	0.75	-	-	-	-	-	3.00	3.00	3.00	3.00
C309	2.40	2.10	3.00	1.88	3.00	3.00	3.00	-	3.00	2.25	-	-	-	3.00
C310	1.38	1.57	1.68	1.89	1.57	-	-	-	1.89	-	1.32	1.42	-	-
C311	2.35	2.09	1.96	-	-	-	2.35	-	-	-	-	2.35	1.83	1.83
C312	2.58	2.58	2.58	2.58	-	-	-	-	-	2.58	2.58	2.58	1.25	1.25
C313	1.86	-	1.91	2.14	2.14	-	-	-	-	2.14	-	2.14	2.14	2.14
C314	2.29	2.29	2.29	-	1.91	-	-	-	-	2.29	-	1.60	2.29	2.29
C315	2.03	2.03	-	-	-	-	-	-	-	-	-	2.03	2.03	2.03
C316	1.78	1.56	2.22	1.39	2.22	2.22	2.22	-	2.22	1.67	-	-	-	2.22
C317	1.25	1.08	1.08	1.25	1.15	-	1.25	-	1.25	1.25	1.25	1.25	1.25	1.25
C318	2.25	1.95	1.05	1.35	2.25	2.25	2.25	-	2.25	2.25	1.58	2.25	2.25	2.25
C319	3.00	3.00	2.40	3.00	-	-	-	-	-	-	-	3.00	3.00	3.00
C401	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00	3.00	3.00	3.00
C402	3.00	3.00	3.00	-	3.00	-	-	-	-	-	-	3.00	3.00	3.00
C403	2.80	3.00	2.50	-	3.00	-	-	3.00	-	3.00	-	2.20	3.00	3.00
C404	3.00	3.00	3.00	3.00	3.00	-	-	-	-	-	-	3.00	3.00	3.00
C405	2.60	3.00	3.00	-	3.00	3.00	0.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00
C406	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	0.00	3.00	3.00	3.00	3.00
C407	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00
C408	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	3.00	3.00	3.00	3.00	3.00
C409	2.92	2.92	2.92	-	-	2.92	-	-	-	2.92	-	2.92	2.92	2.92
C410	2.70	2.60	2.60	2.20	2.40	1.80	1.80	3.00	2.70	3.00	2.70	3.00	3.00	3.00
Direct Attainment	**2.32**	**2.18**	**2.14**	**1.93**	**2.18**	**2.18**	**2.01**	**2.43**	**2.13**	**1.90**	**2.08**	**2.41**	**2.37**	**2.35**
Indirect Attainment	**2.59**	**2.67**	**2.68**	**2.69**	**2.63**	**2.76**	**2.71**	**2.65**	**2.71**	**2.75**	**2.73**	**2.64**	**2.66**	**2.67**
Direct Attainment 80%	***1.86***	***1.74***	***1.71***	***1.54***	***1.74***	***1.74***	***1.61***	***1.94***	***1.70***	***1.52***	***1.66***	***1.93***	***1.90***	***1.88***
Indirect Attainment 20%	***0.52***	***0.53***	***0.54***	***0.54***	***0.53***	***0.55***	***0.54***	***0.53***	***0.54***	***0.55***	***0.55***	***0.53***	***0.53***	***0.53***
OVERALL PO ATTAIN - MENT	**2.37**	**2.28**	**2.25**	**2.08**	**2.27**	**2.30**	**2.15**	**2.47**	**2.25**	**2.07**	**2.21**	**2.45**	**2.43**	**2.41**

Table: Overall Attainment Rating of POs & PSOs

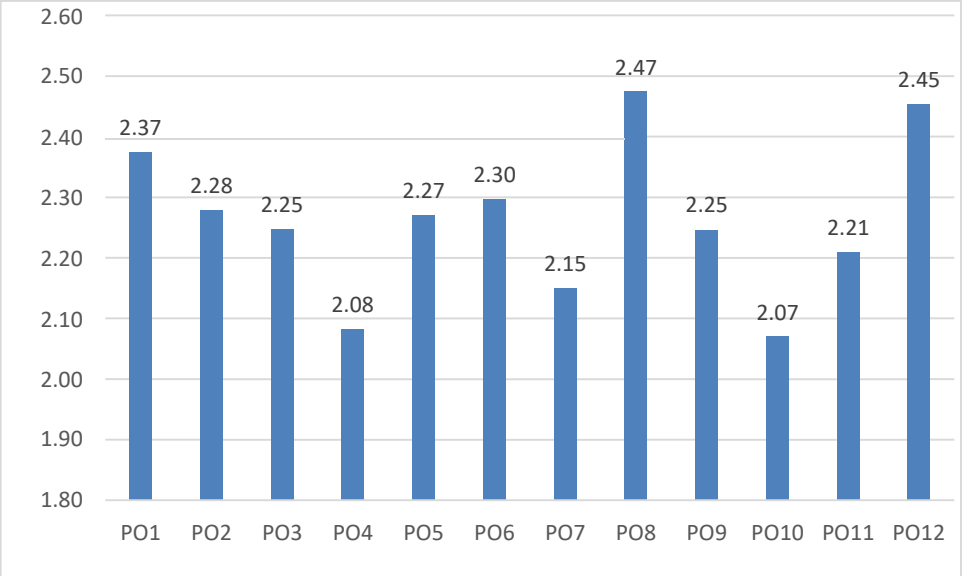

Figure: Mapping of Overall attainment Rating of POs & PSOs