



Programme Specifications

B.Sc.(Hons). Programme

Programme:
Mechanical Engineering

Department:
Mechanical and Manufacturing
Engineering

Faculty of Mathematical & Physical Sciences
M.S. Ramaiah University of Applied Sciences

University House, New BEL Road, MSR Nagar, Bangalore – 560 054

www.msruas.ac.in

| Programme Specifications: Mechanical Engineering | |
|---|--|
| Faculty | Engineering and Technology (FET) |
| Department | Mechanical and Manufacturing Engineering |
| Programme | Mechanical Engineering |
| Dean of Faculty | Prof. Arulanantham |
| HOD | Prof. T. N. Srikantha Dath |

1. Title of the Award

B.Tech. in Mechanical Engineering

2. Modes of study

Full-Time

3. Awarding Institution / Body

M.S.Ramaiah University of Applied Sciences – Bengaluru, India

4. Joint Award

Not Applicable

5. Teaching Institution

Faculty of Engineering and Technology

M.S.Ramaiah University of Applied Sciences - Bengaluru, India

6. Date of Programme Specifications

February 2019

7. Date of Programme Approval by the Academic Council of MSRUAS

May 2019

8. Next Review Date

May 2023

9. Programme Approving Regulatory Body and Date of Approval

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10. Programme Accrediting Body and Date of Accreditation

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11. Grade Awarded by the Accreditation Body

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12. Programme Accreditation Validity

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13. Programme Benchmark

Not Applicable

14. Rationale for the Programme

Mechanical engineering is one of the oldest disciplines of engineering. Designing and manufacturing of mechanical machinery and equipment have been there world over for many centuries. Mechanical Engineering is a foundational discipline, critical to the success of many enterprises. It plays a key role in energy, transportation, development of infrastructure and manufacturing of consumer durables.

Presently, mechanical engineers are contributing in research and development pertaining to environmental and bio-medical fields. Mechanical engineers are responsible for selection and processing of eco-friendly materials and processes, design and fabrication of medical devices and prostheses to improve quality of life.

The mechanical engineering programme at Faculty of Engineering and Technology at RUAS has been developed by the members of the faculty based on their teaching experience and long standing interactions with various Universities and industries in India and abroad. The curriculum is outcome based and helps students to develop critical thinking abilities and imbibe relevant practical skills for a smooth transition from academics to real-life work environment. Opportunities are provided for the students to do their internship in India or abroad depending on their preferences.

The alumni of the faculty hold respected positions in industry and business in India and abroad. The faculty interacts with the industry and business offering engineering and consultancy, product design and development services along with training modules to practicing professionals. The faculty interacts with more than 150 companies in public and private sectors including OEMs spread across India. The above mentioned features of the programme and the faculty members' strong footing in industry and business make the programme unique. The student admitted to the programme in mechanical engineering is given a strong foundation in real-life problem solving which is quite rare with many institutions offering similar programme.

15. Programme Mission

The purpose of the programme is creation of innovative problem solvers in multi-disciplinary settings, entrepreneurs and leaders applying the knowledge, understanding, cognitive abilities, practical skills and transferable skills gained through systematic, flexible and rigorous learning in the chosen academic domain.

16. Graduate Attributes

1. Ability to apply knowledge of mathematics, science, and Engineering fundamentals to solve complex problems in engineering
2. Ability to analyse engineering problems, interpret data and arrive at meaningful conclusions involving mathematical inferences
3. Ability to design an engineering system, component, or process to meet desired needs considering public health and safety, and the cultural, societal, and environmental considerations
4. Ability to understand and solve complex engineering problems by conducting experimental investigations
5. Ability to apply appropriate tools and techniques and understand utilization of resources appropriately to complex engineering activities
6. Ability to understand the effect of engineering solutions on legal, cultural, social and public health and safety aspects
7. Ability to develop sustainable solutions and understand their effect on society and environment
8. Ability to apply ethical principles to engineering practices and professional responsibilities
9. Ability to work as a member of a team, to plan and to integrate knowledge of various engineering disciplines and to lead teams in multidisciplinary settings
10. Ability to make effective oral presentations and communicate technical ideas to a broad audience using written and oral means
11. Ability to lead and manage multidisciplinary teams by applying engineering and management principles
12. Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning

17. Programme Goal

The programme goal is to produce graduates with critical, analytical and problem solving skills, and ability to think independently, to pursue a career in Mechanical Engineering.

18. Programme Objectives

The Mechanical Engineering degree programme will impart knowledge of mechanical systems and their sub systems; enhances the understanding of underlying engineering principles that govern the behavior of mechanical systems; teach analytical modeling, simulation and analysis to study the behavior of mechanical systems; provide the skills to design, build and test mechanical systems. It also trains students on personal development and interactive skills with a feel for society.

The objectives of the programme are to enable the students to:

1. To impart knowledge on mechanical systems and their sub-systems
2. To facilitate the understanding of underlying engineering principles of mechanical systems to explain their construction and working
3. To model, simulate and analyze the behavior of mechanical systems to predict and improve their performance
4. To design and develop prototypes of mechanical systems to meet the specific needs
5. To instrument and test of mechanical systems for validation
6. To train students on commercial software tools to design, model, simulate mechanical systems
7. To train students on manufacture and production of mechanical systems
8. To educate on professional ethics, economics, social sciences and interpersonal skills relevant to professional practice
9. To provide a general perspective on lifelong learning and opportunities for a career in industry, business and commerce

19. Intended Learning Outcomes of the Programme

The Intended Learning Outcomes (ILOs) are listed under four headings:

1. Knowledge and Understanding, 2. Cognitive Skills 3. Practical Skills and 4. Capability / Transferable Skills.

1. Knowledge and Understanding

After undergoing this programme, a student will be able to:

- KU1:** Identify and describe the various systems of relevance to mechanical engineering
- KU2:** Explain the underlying science and engineering principles that govern the systems/processes relevant to mechanical engineering
- KU3:** Compare and contrast newer technologies over the existing technologies
- KU4:** Collect, classify and interpret information relevant to mechanical engineering

2. Cognitive Skills

After undergoing this programme, a student will be able to:

- CS1:** Design Mechanical systems/processes based on the desired function
- CS2:** Model and simulate mechanical systems to analyze the behavior
- CS3:** Modify the existing design/processes to meet newer requirements
- CS4:** Apply science and engineering principles to evaluate performance of mechanical systems and answer "what if" questions

3. Practical Skills

After undergoing this programme, a student will be able to:

- PS1:** Manufacture/Fabricate mechanical components and assemble the system
- PS2:** Instrument a system and test for its performance
- PS3:** Operate and maintain a mechanical system for efficient and safe operations
- PS4:** Program/Control a mechanical system to deliver desired level of performance

4. Capability / Transferable Skills

After undergoing this programme, a student will be able to:

- TS1:** Manage information, develop technical reports and make presentations
- TS2:** Build, Manage and Lead a team to successfully complete a project and communicate across teams and organizations to achieve professional objectives
- TS3:** Work under various constraints to meet project targets
- TS4:** Adopt to the chosen profession by continuously upgrading his/her knowledge and understanding through Life-long Learning philosophy

20. Programme Structure**Semester: 1, Physics Cycle**

| Sl. No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-----------------|-------------------|-------------------|---------------|------------|
| 1 | 18BSC101A | Engineering Mathematics-1 | 3 | 2 | 0 | 4 | 100 |
| 2 | 18BSC102A | Engineering Physics | 3 | 2 | 0 | 4 | 100 |
| 3 | 18ESC101A | Elements of Mechanical Engineering | 3 | 0 | 0 | 3 | 100 |
| 4 | 18ESC102A | Elements of Electronics Engineering | 3 | 2 | 0 | 4 | 100 |
| 5 | 18ESC103A | Engineering Drawing | 1 | 0 | 4 | 3 | 100 |
| 6 | 18BSL103A | Engineering Physics Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 18ESL104A | Basic Workshop Practice | 0 | 0 | 2 | 1 | 50 |
| 8 | 18ESL105A | Basic Electronics Laboratory | 0 | 0 | 2 | 1 | 50 |
| 9 | 18HST101A | Elements of Social Sciences and Ethics | 2 | 0 | 0 | 2 | 50 |
| Total | | | 15 | 6 | 10 | 23 | 700 |
| Total number of contact hours per week | | | 31 hours | | | | |
| Number of credits can be registered | | | Minimum | 18 | Maximum | 23 | |

Semester: 2, Chemistry Cycle

| Sl. No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-----------------|-------------------|-------------------|---------------|------------|
| 1 | 18BSC104A | Engineering Mathematics - 2 | 3 | 2 | 0 | 4 | 100 |
| 2 | 18BSC105A | Engineering Chemistry | 3 | 0 | 0 | 3 | 100 |
| 3 | 18ESC106A | Engineering Mechanics and Construction Materials | 3 | 2 | 0 | 4 | 100 |
| 4 | 18ESC107A | Elements of Electrical Engineering | 3 | 2 | 0 | 4 | 100 |
| 5 | 18ESC108A | Elements of Computer Science and Engineering | 3 | 2 | 0 | 4 | 100 |
| 6 | 18ESL109A | Computer Programming Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 18BSL106A | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 | 50 |
| 8 | 18ESL110A | Basic Electrical Engineering Laboratory | 0 | 0 | 2 | 1 | 50 |
| 9 | 18HST102A | Professional Communication | 2 | 0 | 0 | 2 | 50 |
| Total | | | 17 | 8 | 6 | 24 | 700 |
| Total number of contact hours per week | | | 31 hours | | | | |
| Number of credits can be registered | | | Minimum | 20 | Maximum | 24 | |

Semester: 1 Chemistry Cycle

| Sl. No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-----------------|-------------------|-------------------|---------------|------------|
| 1 | 18BSC101A | Engineering Mathematics-1 | 3 | 2 | 0 | 4 | 100 |
| 2 | 18BSC105A | Engineering Chemistry | 3 | 0 | 0 | 3 | 100 |
| 3 | 18ESC106A | Engineering Mechanics and Construction Materials | 3 | 2 | 0 | 4 | 100 |
| 4 | 18ESC107A | Elements of Electrical Engineering | 3 | 2 | 0 | 4 | 100 |
| 5 | 18ESC108A | Elements of Computer Science and Engineering | 3 | 2 | 0 | 4 | 100 |
| 6 | 18BSL109A | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 18ESL106A | Basic Electrical Laboratory | 0 | 0 | 2 | 1 | 50 |
| 8 | 18ESL110A | Computer Programming Laboratory | 0 | 0 | 2 | 1 | 50 |
| 9 | 18HST102A | Professional Communication | 2 | 0 | 0 | 2 | 50 |
| Total | | | 17 | 8 | 6 | 24 | 700 |
| Total number of contact hours per week | | | 31 hours | | | | |
| Number of credits can be registered | | | Minimum | 20 | Maximum | | 24 |

Semester : 2, Physics Cycle

| S. No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|-------------------------------------|-----------------|-------------------|-------------------|---------------|------------|
| 1 | 18BSC104A | Engineering Mathematics-2 | 3 | 2 | 0 | 4 | 100 |
| 2 | 18BSC102A | Engineering Physics | 3 | 2 | 0 | 4 | 100 |
| 3 | 18ESC101A | Elements of Mechanical Engineering | 3 | 0 | 0 | 3 | 100 |
| 4 | 18ESC102A | Elements of Electronics Engineering | 3 | 2 | 0 | 4 | 100 |
| 5 | 18ESC103A | Engineering Drawing | 1 | 0 | 4 | 3 | 100 |
| 6 | 18BSL103A | Engineering Physics Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 18ESL104A | Basic Workshop Practice | 0 | 0 | 2 | 1 | 50 |
| 8 | 18ESL105A | Basic Electronics Laboratory | 0 | 0 | 2 | 1 | 50 |
| 9 | 18HST101A | Elements of Social Science | 2 | 0 | 0 | 2 | 50 |
| Total | | | 15 | 6 | 10 | 23 | 700 |
| Total number of contact hours per week | | | 31 hours | | | | |
| Number of credits can be registered | | | Minimum | 18 | Maximum | | 23 |

SEMESTER 3

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--------------------------------|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MHB201A | Engineering Mathematics - 3 | 3 | 1 | 0 | 4 | 100 |
| 2 | 19MEC202A | Materials Science | 3 | 0 | 0 | 3 | 100 |
| 3 | 19MEC203A | Engineering Thermodynamics | 3 | 1 | 0 | 4 | 100 |
| 4 | 19MEC204A | Fluid Mechanics | 3 | 1 | 0 | 4 | 100 |
| 5 | 19MEC205A | Manufacturing Processes | 3 | 0 | 0 | 3 | 100 |
| 6 | 19MEL206A | Machine Drawing | 0 | 0 | 4 | 2 | 50 |
| 7 | 19MEL207A | Mechanical Dissection | 0 | 0 | 2 | 1 | 50 |
| 8 | 19MEL208A | Foundry and Forging Laboratory | 0 | 0 | 2 | 1 | 50 |
| 9 | 19CEM210A | Environmental Studies | 2 | 0 | 0 | 0 | Audit |
| Total | | | 17 | 03 | 08 | 22 | 650 |
| Total number of contact hours per week | | | 28 hours | | | | |
| Number of credits can be registered | | | Minimum | 18 | Maximum | 22 | |

SEMESTER 4

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MHB211A | Engineering Mathematics - 4 | 3 | 1 | 0 | 4 | 100 |
| 2 | 19MEC212A | Fluid Machines | 3 | 0 | 0 | 3 | 100 |
| 3 | 19MEC213A | Mechanisms and Kinematics of Machines and Laboratory | 3 | 0 | 2 | 4 | 100 |
| 4 | 19MEC214A | Strength of Materials | 3 | 1 | 0 | 4 | 100 |
| 5 | 19MEC215A | Conventional Machining Processes | 3 | 0 | 0 | 3 | 100 |
| 6 | 19MEL216A | Fluid Mechanics and Machines Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 19MEL217A | Materials Science and Strength of Materials Laboratory | 0 | 0 | 2 | 1 | 50 |
| 8 | 19MEL218A | Machine Shop Practice | 0 | 0 | 2 | 1 | 50 |
| Total | | | 15 | 02 | 08 | 21 | 650 |
| Total number of contact hours per week | | | 25 hours | | | | |
| Number of credits can be registered | | | Minimum | 17 | Maximum | 21 | |

SEMESTER 5

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MEC301A | Applied Thermodynamics | 3 | 1 | 0 | 4 | 100 |
| 2 | 19MEC302A | Dynamics of Machinery | 3 | 1 | 0 | 4 | 100 |
| 3 | 19MEC303A | Design of Machine Elements - 1 | 3 | 1 | 0 | 4 | 100 |
| 4 | 19MEC304A | Automation in Manufacturing | 3 | 0 | 0 | 3 | 100 |
| 5 | 19MEC305A | Mechanical Measurements and Metrology and Laboratory | 3 | 0 | 2 | 4 | 100 |
| 6 | 19MEL306A | Applied Thermodynamics Laboratory | 0 | 0 | 2 | 1 | 50 |
| 7 | 19MEL307A | Dynamics and Simulation Laboratory | 0 | 0 | 2 | 1 | 50 |
| 8 | 19MEL308A | CAM Laboratory | 0 | 0 | 2 | 1 | 50 |
| Total | | | 15 | 03 | 08 | 22 | 650 |
| Total number of contact hours per week | | | 26 hours | | | | |
| Number of credits can be registered | | | Minimum | 18 | Maximum | 22 | |

SEMESTER 6

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|--|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MEC311A | Heat and Mass Transfer | 3 | 1 | 0 | 4 | 100 |
| 2 | 19MEC312A | Finite Element Methods and CAE Laboratory | 3 | 0 | 2 | 4 | 100 |
| 3 | 19MEC313A | Design of Machine Elements - 2 | 3 | 1 | 0 | 4 | 100 |
| 4 | 19MEC314A | Control Systems Engineering and Laboratory | 3 | 0 | 2 | 4 | 100 |
| 5 | 19MEC315A | Industrial Engineering and Management | 3 | 0 | 0 | 3 | 100 |
| 6 | 19MEP316A | Seminar | 0 | 0 | 2 | 1 | 50 |
| 7 | 19MEC317A | Engineering Economics and Cost Estimation for Mechanical Engineers | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEL318A | Heat and Mass Transfer Laboratory | 0 | 0 | 2 | 1 | 50 |
| Total | | | 18 | 02 | 08 | 24 | 700 |
| Total number of contact hours per week | | | 28 hours | | | | |
| Number of credits can be registered | | | Minimum | 19 | Maximum | 24 | |

SEMESTER 7

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|-----------------------------------|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MEE41XA | Professional Core Elective - 1 | 3 | 0 | 0 | 3 | 100 |
| 2 | 19MEE42XA | Professional Core Elective - 2 | 3 | 0 | 0 | 3 | 100 |
| 4 | 19MEO401A | Open Elective - 1 | 3 | 0 | 0 | 3 | 100 |
| 5 | 19MEP402A | I] Project Work - 1 | 0 | 0 | 12 | 6 | 100 |
| | 19MEP403A | II] Internship (Choose one) | | | | | |
| Total | | | 9 | 0 | 12 | 15 | 400 |
| Total number of contact hours per week | | | 21 hours | | | | |
| Number of credits can be registered | | | Minimum | 12 | Maximum | 15 | |

SEMESTER 8

| Sl.No. | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|---|-----------|-----------------------------------|-------------------|----------------------|----------------------|------------------|---------------|
| 1 | 19MEE43XA | Professional Core Elective - 3 | 3 | 0 | 0 | 3 | 100 |
| 2 | 19MEO411A | Open Elective - 2 | 3 | 0 | 0 | 3 | 100 |
| 3 | 19MEP412A | Project Work - 2 | 0 | 0 | 20 | 10 | 100 |
| Total | | | 6 | 0 | 20 | 16 | 300 |
| Total number of contact hours per week | | | 26 hours | | | | |
| Number of credits can be registered | | | Minimum | 13 | Maximum | 16 | |

Professional Core Elective Courses:

| Semester | Code | Course Title | Theory (h/W/S) | Tutorials (h/W/S) | Practical (h/W/S) | Total Credits | Max. Marks |
|----------|-----------|--|----------------|-------------------|-------------------|---------------|------------|
| 7 | 19MEE411A | Fatigue and Fracture Mechanics | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE421A | Tribology | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE412A | Advanced Materials | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE422A | Advanced Manufacturing Technologies | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE413A | Fluid Power Systems | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE423A | Power Plant Engineering | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE414A | Operations Research | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE424A | Total Quality Management and Six Sigma | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE415A | Robot Kinematics and Dynamics | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MEE425A | Mechatronics | 3 | 0 | 0 | 3 | 100 |
| 7 | 19MHE401A | Probability and Statistics | 3 | 0 | 0 | 3 | 100 |
| 7 | 19CSE421A | Data Science Foundation | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEE431A | Noise Vibration and Harshness | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEE432A | Surface Engineering | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEE433A | Computational Fluid Dynamics | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEE434A | Supply Chain Management | 3 | 0 | 0 | 3 | 100 |
| 8 | 19MEE435A | Robot Programming and Control | 3 | 0 | 0 | 3 | 100 |
| 8 | 19CSE431A | Data Analytics | 3 | 0 | 0 | 3 | 100 |

| Sem | Professional Core Elective | Group -1 (Design) | | Group-2 (Manufacturing) | |
|-----|----------------------------|-------------------|--------------------------------|-------------------------|-------------------------------------|
| | | Course Code | Course Title | Course Code | Course Title |
| 7 | 1 | 19MEE411A | Fatigue and Fracture Mechanics | 19MEE412A | Advanced Materials |
| 7 | 2 | 19MEE421A | Tribology | 19MEE422A | Advanced Manufacturing Technologies |
| 8 | 3 | 19MEE431A | Noise Vibration and Harshness | 19MEE432A | Surface Engineering |

| | | Group -3 (Thermal) | | Group-4 (Industrial Engineering) | |
|------------|-----------------------------------|---------------------------|------------------------------|---|--|
| Sem | Professional Core Elective | Course Code | Course Title | Course Code | Course Title |
| 7 | 1 | 19MEE413A | Fluid Power Systems | 19MEE414A | Operations Research |
| 7 | 2 | 19MEE423A | Power Plant Engineering | 19MEE424A | Total Quality Management and Six Sigma |
| 8 | 3 | 19MEE433A | Computational Fluid Dynamics | 19MEE434A | Supply Chain Management |

| | | Group -5 (Robotics) | | Group-6 (Statistics) | |
|------------|-----------------------------------|----------------------------|-------------------------------|-----------------------------|----------------------------|
| Sem | Professional Core Elective | Course Code | Course Title | Course Code | Course Title |
| 7 | 1 | 19MEE415A | Robot Kinematics and Dynamics | 19BSE401A | Probability and Statistics |
| 7 | 2 | 19MEE425A | Mechatronics | 19CSE421A | Data Science Foundation |
| 8 | 3 | 19MEE435A | Robot Programming and Control | 19CSE431A | Data Analytics |

21. Programme Delivery

As per Time Table

22. Teaching and Learning Methods

The module delivery comprises of a combination of few or all of the following:

1. Face to face lectures using audio-visuals
2. Workshops-group discussions, debates, presentations
3. Demonstrations
4. Guest lectures
5. Laboratory-work/Field work/Workshop
6. Industry visit
7. Seminars
8. Group Exercises
9. Project Work
10. Project Exhibitions
11. Technical Events

23. Assessment and Grading

1. Every course will be assessed for a weight of 100%
2. For the courses having 100% theory

There are two components-Component-1 and Component-2

Component-1 (CE) carries a weight of 50% and Component -2 (SEE) carries a weight of 50%

Component-1 (CE): 50% weight

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each theory course is indicated in Table below.

| ILO No. | Intended Learning Outcome | CE (Weightage: 50 %) | | | | SEE |
|---------|---------------------------|----------------------|---------|---------|---------|-------------------|
| | | Assessment Type | Comp-1a | Comp-1b | Comp-1c | (Weightage: 50 %) |
| | | Comp Weightage (%) | xx | xx | xx | Sem End Exam |
| 1 | ILO-1 | | | | | |
| 2 | ILO-2 | | | | | |
| 3 | ILO-3 | | | | | |
| 4 | ILO-4 | | | | | |
| 5 | ILO-5 | | | | | |
| 6 | ILO-6 | | | | | |

CE – can be from any combination of the following:

Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, others, if any.

Component - 2 (SEE): 50% weight

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks and will be reduced to 50% weight.

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each theory course.

3. For Laboratory/ Practical courses

Total Marks : 50

Component 1(CE) : Laboratory Report: 50% Weight

Component 2(SEE) Semester End Examination: 50% Weight

A 3 hour duration Semester End Examination will be conducted for a maximum of 50 marks.

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table

below.

| ILO No. | Intended Learning Outcome | CE (Weightage: 50 %) | | | | | SEE (Weightage: 50 %): |
|---------|---------------------------|----------------------|-------------------------------|--------|-------------------------|------------|------------------------|
| | | Assessment Type | Conduction of Lab Exercises) | (Viva) | (Lab Record Submission) | (Lab Test) | SEE |
| | | Comp Weightage (%) | | | | | 50 |
| 1 | ILO-1 | | | | | | |
| 2 | ILO-2 | | | | | | |

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each laboratory course.

4. **For courses with a combination of theory and laboratory**

There are two components-Component-1 and Component-2

Component-1 (CE) carries a weight of 50% and Component -2 (SEE) carries a weight of 50%.

Component-1 (CE): 50% weight

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table below.

| ILO No. | Intended Learning Outcome | CE (Weightage: 50 %) | | | | SEE (Weightage: 50 %) |
|---------|---------------------------|----------------------|---------|---------|---------|-----------------------|
| | | Assessment Type | Comp-1a | Comp-1b | Comp-1c | SEE |
| | | Comp Weightage (%) | 00 | 00 | 00 | 50 |
| 1 | ILO-1 | | | | | |
| 2 | ILO-2 | | | | | |
| 3 | ILO-3 | | | | | |
| 4 | ILO-4 | | | | | |
| 5 | ILO-5 | | | | | |
| 6 | ILO-6 | | | | | |

CE – can be from any combination of the following:

Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-

Study, others,

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks and will be reduced to 50 marks.

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each theory course.

Other flexibilities (exceptions) as per the programme regulations

24. Attendance

A minimum of 80% attendance compulsory to appear for semester end examinations. Any condoning is as per the programme regulations.

25. Award of Class

As per the Academic Regulations for B.Tech. Programme

26. Student Support for Learning

Students are given the following support:

1. Course notes
2. Reference books in the library
3. Magazines and Journals
4. Internet facility
5. Computing facility
6. Laboratory facility
7. Workshop facility
8. Staff support
9. Lounges for discussions
10. Any other support that enhances their learning

27. Quality Control Measures

Following are the Quality Control Measures:

1. Review of course notes
2. Review of question papers and assignment questions
3. Student Feedback
4. Moderation of assessed work
5. Opportunities for the students to see their assessed work
6. Review and Audit by external examiners
7. Staff Student Consultative Committee meetings
8. Student exit feedback

28. Curriculum Map

| Course Code | | | | | | | Intended Learning Outcomes | | | | | | | | | | | |
|-------------|---------|-------|-------|---------|-------|-------|-----------------------------|------|-----|------|---|-----|-----|-----|------------------|-----|-----|-----|
| | | | | | | | Knowledge and Understanding | | | | Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving) | | | | Practical skills | | | |
| HS | BSC/L/E | ESC/L | MEC/L | OEE | ME/CS | CEN | KU1 | KU2 | KU3 | KU4 | CS1 | CS2 | CS3 | CS4 | PS1 | PS2 | PS3 | PS4 |
| a | b | c | d | e | f | g | | | | | | | | | | | | |
| T101A | C101A | C101A | C201A | 401A | E411A | 201A | cf | cdf | c | cdf | f | df | d | df | | | | |
| T102A | C102A | C102A | C202A | 402A | E421A | | cdf | cdf | c | cdf | df | f | | df | | | | |
| C301A | L103A | C103A | C203A | 403A | E431A | | df | df | f | df | f | f | f | df | | b | | |
| | C104A | L104A | L204A | 404A | E412A | | df | df | f | df | | | f | df | c | d | d | d |
| | C105A | C105A | L205A | 405A | E422A | | bf | bf | bf | bf | f | | f | df | | cd | d | d |
| | L106A | C106A | L206A | 406A | E432A | | cdf | cdf | cf | cf | | d | df | f | d | | | b |
| | C207A | C107A | C207A | 451A | E413A | | cf | cf | cf | cf | f | f | f | f | | d | | d |
| | C208A | L108A | C208A | 452A | E423A | | df | f | cf | cdf | d | df | f | df | | | | c |
| | E401A | C109A | C209A | 453A | E433A | | bdf | cbdf | bdf | cbdf | | | f | bdf | | | | c |
| | | L110A | C210A | 454A | E414A | | df | df | | df | d | | d | d | | c | | |
| | | | C201A | L212A | 455A | E424A | f | cf | f | cf | | | f | f | | | | |
| | | | | L211A | 456A | E434A | f | f | f | f | | | f | f | d | d | d | d |
| | | | | L212A | 457A | E415A | f | f | f | f | f | | f | f | d | | d | d |
| | | | | C301A | | E425A | df | df | df | df | f | f | f | df | | | | |
| | | | | C302A | | E435A | df | df | f | df | d | | df | df | | | | |
| | | | | C303A | | E421A | df | df | f | df | d | | d | df | | | | |
| | | | | C304A | | E431A | df | df | df | df | d | | | df | | | | |
| | | | | C305A | | | d | d | d | d | | | d | d | | | | |
| | | | | L306A | | | | | | | | | | | d | | d | d |
| | | | | L307A | | | | | | | d | d | d | d | d | | | d |
| | | | | L308A | | | | | | | | | | d | | d | | d |
| | | | | C309A | | | | | | | | | d | d | d | | | |
| | | | | C310A | | | d | d | | d | | | | d | | | | |
| | | | | C311A | | | d | d | d | d | d | | | d | | | | |
| | | | | C312A | | | d | d | d | d | d | d | | d | | | | |
| | | | | C313A | | | d | d | | d | d | | d | d | | | | |
| | | | | C314A | | | d | d | d | d | | | | d | | | | |
| | | | | L315A | | | d | d | | d | d | d | | d | | | | |
| | | | | MEP401A | | | d | d | d | d | d | d | d | d | d | d | d | d |
| | | | | MEI401A | | | d | d | d | d | d | d | d | d | d | d | d | d |
| | | | | MEP402A | | | d | d | d | d | d | d | d | d | d | d | d | d |
| 07 | 28 | 22 | 91 | 06 | 09 | 0 | Total 160 credits | | | | | | | | | | | |

*Depends on elective Course chosen

29. Capability / Transferable Skills Map

| Course Code | | | | | | | Skills | | | | | | | | | |
|-------------|---------|-------|---------|------|-------|------|---------|---------|---------|--------|---|----|---------|---------|----|----|
| HST | BSC/L/E | ESC/L | MEC/L | OEE | ME/CS | CEN | GK | SL | WC | OC | P | B | IM | PM | L | AO |
| a | b | c | d | e | f | g | | | | | | | | | | |
| T101A | C101A | C101A | C201A | 401A | E411A | 201A | abcdefg | abcdefg | abcdefg | g | g | ag | abcdefg | abcdefg | ag | ag |
| T102A | C102A | C102A | C202A | 402A | E421A | | abcdef | abcdef | abcdef | abcdef | a | a | abcdef | abcdef | af | af |
| T201A | L103A | C103A | C203A | 403A | E431A | | abcdef | abcdef | abcdef | b | | af | abcdef | abcdef | | a |
| C301A | C104A | L105A | L204A | 404A | E412A | | abcdef | abcdef | abcdef | cf | | a | abcdef | abcdef | | a |
| | C105A | C106A | L205A | 405A | E422A | | bcd | bcd | bcd | d | | | bcd | bcd | | |
| | L106A | C107A | L206A | 406A | E432A | | bcd | bcd | bcd | b | | | bcd | bcd | | |
| | C207A | C108A | C207A | 451A | E413A | | bcd | bcd | bcd | | | | bcd | bcd | | |
| | C208A | L108A | C208A | 452A | E423A | | bcd | bcd | bcd | c | | | bcd | bcd | | |
| | E401A | C109A | C209A | 453A | E433A | | cd | cd | cd | c | | | cd | cd | | |
| | | L110A | C210A | 454A | E414A | | cd | cd | cd | cf | | | cd | cd | | |
| | | C201A | L212A | 455A | E424A | | cd | cd | cd | df | | | cd | cd | | |
| | | | L213A | 456A | E434A | | cd | cd | cd | cd | | | cd | cd | | |
| | | | C301A | 457A | E415A | | d | d | d | d | | | d | d | | |
| | | | C302A | | E425A | | d | d | d | | | | d | d | | |
| | | | C303A | | E435A | | d | d | d | | | | d | d | | |
| | | | C304A | | E421A | | d | d | d | f | | | d | d | | |
| | | | C305A | | E431A | | d | d | d | f | | | d | d | | |
| | | | L306A | | | | d | d | d | | | | d | d | | |
| | | | L307A | | | | d | d | d | d | | | d | d | | |
| | | | L308A | | | | d | d | d | d | | | d | d | | |
| | | | C309A | | | | d | d | d | d | | | d | d | | |
| | | | C310A | | | | d | d | d | d | | | d | d | | |
| | | | C311A | | | | d | d | d | | | | d | d | | |
| | | | C312A | | | | d | d | d | | | | d | d | | |
| | | | C313A | | | | d | d | d | | | | d | d | | |
| | | | L314A | | | | d | d | d | d | | | d | d | | |
| | | | C401A | | | | d | d | d | d | | | d | d | | |
| | | | MEPI41A | | | | d | d | d | d | d | d | d | d | d | d |
| | | | MEPI42A | | | | d | d | d | d | d | d | d | d | d | d |
| | | | MECP43A | | | | d | d | d | d | d | d | d | d | d | d |

GK: Group Work; SL: Self Learning; WC: Written Communication; OC: Oral Communication P: Presentation; B: Behavioural; IM: Information Management; PM: Personal Management L: Leadership

30. Co-curricular Activities

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposium, paper writing, attending industry exhibitions, project competitions and related activities to enhance their knowledge and network.

31. Cultural and Literary Activities

To remind and ignite the creative endeavours annual cultural festivals held and the students are made to plan and organize the activities.

32. Sports and Athletics

Students are encouraged to develop a habit of taking part in outdoor and indoor games on regular basis.

