

Course Curriculum Framework

Name of Program: B.Tech (Mechatronics)

OJT Starting from 6th Semester

(Revised 05/08/2024)

| Type of Course | Major Core | | | | | Skill Enhancement 1 & 2 | Ability Enhancement 1 & 2 | Value Added Course s | Multi - disciplinary 1 & 2 | OJT | Audit Course | Credit |
|--|---|--|--|--|--|--|---|---------------------------------------|---|-----|---|--------|
| Sem | Discipline Core 1 & 2 | Discipline Core 3 & 4 | Discipline Core 5 | Discipline Elective 1 | Discipline Elective 2 | | | | | | | |
| Semester I | 1. Engineering Mathematics – I (4) 2. Engineering Graphics and CAD (2) +Certiport Certification for Python-/Java | 3. Engg. Materials and Composites (2) 4. Hydraulic and Pneumatic Systems(2) | 5. Basics of Electrical and Electronics Engg (2) | — | -- | 1. Programming Language Lab (2)+Certiport Certification on Python 2. Engg Lab I (Module- I Workshop Module- II CAD Lab) (2) | 1. Programming Language (2) 2. Engg. Lab II (Module- I Electrical Engg. Module-II Electronics) Module-III Hydraulic and Pneumatic Lab(3) | | | -- | Environmental Science and Engg | 21 |
| Semester II | 1. Engineering Mathematics –II (4) 2. Engineering Mechanics & SOM(2) | 3. Manufacturing Technology (3) 4. Control and Instrumentation (2) | 5. Digital Electronics(2) | -- | -- | 1. Engg Lab III <u>Module-1</u> Engineering Mechanics(1) <u>Module-2</u> Manufacturing Technology (1) 2. Engg Lab IV <u>Module I</u> Control & Instrumentation (1) <u>Module II</u> Digital Electronics (1) | Engineering Design & Modelling (2) +Certiport Certification AutoCAD | Climate change and Carbon Credits (1) | | -- | Universal Human Values | 20 |
| Exit with UG Certifications in Mechatronics | | | | | | | | | | | | |
| Semester III | 1. Engineering Mathematics –III (4) 2. Heat and Mass Transfer (3) | 3. Kinematics of Machinery (2) 4. Microcontrollers (2) | | 1)Automotive Electronics (2) OR 2) Medical Mechatronics (2) | 1) Industrial Robotics (2) OR 2) Process Automation (2) | Engg Lab V: Module-I Heat Transfer (1) Module-II- Kinematics of Machinery (1) | Engg Lab VI Module I: Microcontroller Lab (1) Module II: Process Automation Lab (1) | --- | 1. Organization Behaviour(2) OR 2) Financial Literacy (2) + Certiport Certification for computational thinking | -- | A. Foreign Language I - Japanese / German / Chinese | 21 |

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|---|--|--|----------------------------------|--|--|---|---|-----|--|----------|---|------------|
| SemesterIV | 1. Fluid Mechanics and Machinery (3) 2. Machine Design (3) | 3. Micro Electromechanical systems (2) 4. Artificial system and Machine learning (2) + Certiport Certification for Azure AI 900 | Design of Mechatronics System(2) | A) Product Design & Devp(2) OR B) Digital Signal Processing (2) | A).Finite Element Method (2) OR B) Rapid Prototyping (2) | Engg Lab VII: Module- I: Fluid Mechanics andMachinery (1) Module-II : MachineDesign (1) | | | 1. Design Thinking and Innovation (2) OR 2.Intellectual property Rights IPR (2) | -- | A. Foreign Language II – French/ Japanese / German / French / Chinese B. Entrepreneurship | 20 |
| Diploma in Mechatronics | | | | | | | | | | | | |
| SemesterV | 1. Microcontroller & its Applications (2) 2. Robotics and Machine Vision system (2) | 3. Vibration analysis and control (3) 4.Data communication (2) | 5.Internet of things (2) | A) Operation Research(2) OR B) Industry 4.O (2) | A)Electric Vehicles(2) OR B)Human M/c Interface | Engg Lab VIII: Module- I: Embedded system design (1) Module-II – Robotics Lab(1) | 1) Engg. Lab-IX Module- I Vibration analysis and control (1) Module- II Metrology Lab-(1) | -- | MIS – (case study based) (2) + Certiport Certification Design Thinking Delight | | A. Foreign Language III – French / Japanese / German / French / Chinese(0) B. Entrepreneurship | 21 |
| SemesterVI | -- | -- | -- | | -- | -- | Robotics and Automation (3) + Certiport Certification Automation in Mechatronics | (1) | -- | OJT (16) | Constitution of India | 20 |
| Advanced Diploma in Mechatronics | | | | | | | | | | | | |
| SemesterVII | -- | -- | -- | | -- | -- | Engg. Economics/ Research Methodology (4) | (1) | Certiport Certification MATLAB Programming for Numerical | OJT (16) | Disaster Management | 21 |
| SemesterVIII | -- | -- | -- | | -- | -- | Software Project Management (4) + Certiport Certification Project Management Ready | -- | -- | OJT (16) | English for research paper writing/ Personality Development and Professional Ethics + Certiport Certification Englis h for IT | 20 |
| BTech in Mechatronics | | | | | | | | | | | Total Credit | 164 |

Table 6: Course Grid MSSU