**SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY**
**An Autonomous Institution Affiliated to Anna University**
**Kuniamuthur**
**Coimbatore - 641 008**

## VISION AND MISSION OF THE DEPARTMENT

### Vision

World class education in the fields of automation and simulation to make Mechatronics Engineering the most preferred program among engineering aspirants

### Mission

To impart knowledge to the students participating in the program by providing

**M1:** Expert Faculty to teach, inspire, mentor and motivate.

**M2:** Excellent Infrastructure with facilities to learn Mechatronics, research and experiment.

**M3:** Motivation towards self-learning, social responsibility and entrepreneurship.

**M4:** Exposure to the latest technologies through industry-institute interaction.

**M5:** Environment to develop their innovative thoughts, moral values, communication and multi-disciplinary skills.

### Programme Outcomes (POs): -

At the time of their graduation students of Mechatronics Engineering Programme should be in possession of the following Programme Outcomes

PO1     **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2     **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.

PO3     **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.

PO4     **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.

PO5     **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.

PO6     **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.

PO7     **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.

PO8     **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9     **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10     **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.

PO11     **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.

PO12     **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.

## Programme Educational Objectives (PEOs):-

The following Programme Educational Objectives are designed based on the department mission

**PEO1**  To apply knowledge of Mathematics, Science and Mechatronics Engineering to solve contemporary engineering problems in the field of automation.

**PEO2**  To design, analyze, fabricate and test smart products.

**PEO3**  To exhibit the skills of simulation and experimentation using advanced engineering tools of industrial standards.

**PEO4**  To communicate and develop strong interpersonal abilities to prepare them for placements and higher studies.

**PEO5**  To be self-motivated towards lifelong learning and entrepreneurship.

### Mapping of POs to PEOs

| Programme Educational Objectives | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **PEO 1** | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 |
| **PEO 2** | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 3 |
| **PEO 3** | 3 | 3 | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| **PEO 4** | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| **PEO 5** | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 3 |

| **1** | Reasonably agreed | **2** | Moderately agreed | **3** | Strongly agreed |
|---|---|---|---|---|---|

## Programme Specific Outcomes (PSO): -

At the end of the Programme, Graduate shall have

**PSO1**  Design, simulate and create automation systems for various applications.

**PSO2**  Apply the Knowledge of Robotics for addressing Societal, health and Safety Issues

# SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATORE-641008
## B.E. MECHATRONICS ENGINEERING
## REGULATION 2022
## CHOICE-BASED CREDIT SYSTEM
## I – VIII SEMESTER CURRICULUM AND SYLLABI

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| | | **SEMESTER I** | | | | | |
| 1. | 22MT101 | Production Technology | 3/0/0 | 3 | 3 | 60/40 | ESC |
| 2. | 22MA105 | Matrices and Calculus I | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 3. | 22EN101 | Technical Communication Skills | 2/0/2 | 4 | 3 | 50/50 | HSMC |
| 4. | 22CS101 | Problem Solving using C++ | 3/0/2 | 5 | 4 | 50/50 | ESC |
| 5. | 22PH104 | Applied Physics | 3/0/2 | 5 | 4 | 50/50 | BSC |
| 6. | 22MT102 | Computer Aided Drawing Laboratory for Mechatronics | 0/0/3 | 3 | 1.5 | 40/60 | ESC |
| 7. | 22MT103 | Production Technology Laboratory | 0/0/3 | 3 | 1.5 | 40/60 | ESC |
| 8. | 22MC1XX | Mandatory Course – I | Three Weeks | | 0 | 0/100 | MC |
| | | **Total** | 14/1/12 | 27 | 21 | 800 | |

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| | | **SEMESTER II** | | | | | |
| 1. | 22MT201 | Applied Mechanics | 3/0/0 | 3 | 3 | 60/40 | ESC |
| 2. | 22GE201 | Universal Human Values | 3/0/0 | 3 | 3 | 60/40 | HSMC |
| 3. | 22MT202 | Analog and Digital Electronics | 3/0/0 | 3 | 3 | 60/40 | ESC |
| 4. | 22MA204 | Calculus II and Transforms | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 5. | 22TA101 | Heritage of Tamils | 1/0/0 | 1 | 1 | 60/40 | HSMC |
| 6. | 22CS201 | Data Structures and Algorithms | 3/0/2 | 5 | 4 | 50/50 | ESC |
| 7. | 22CH101 | Engineering Chemistry | 3/0/2 | 5 | 4 | 50/50 | BSC |
| 8. | 22MT203 | Analog and Digital Electronics Laboratory | 0/0/2 | 2 | 1 | 40/60 | ESC |
| 9. | 22MC1XX | Mandatory Course – II | 2/0/0 | 2 | 0 | 0/100 | MC |
| | | **Total** | 21/1/6 | 28 | 23 | 900 | |

## SEMESTER III

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| 1. | 22MT301 | Control Systems for Mechatronics | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 2. | 22MT302 | Electrical Machines for Mechatronics | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 3. | 22MT303 | Design and Modelling of Mechatronics Systems | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 4. | 22MT304 | Theory of Machines | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 5. | 22MA305 | Fourier Series and Partial Differential Equations | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 6. | 22TA201 | Tamils and Technology | 1/0/0 | 1 | 1 | 60/40 | HSMC |
| 7. | 22IT311 | Introduction to Python Programming | 1/0/4 | 5 | 3 | 50/50 | ESC |
| 8. | 22MT305 | Electrical Machines for Mechatronics Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 9. | 22MT306 | Mechanics of Machines and Materials Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 10. | 22MC1XX | Mandatory Course – III | 2/0/0 | 2 | 0 | 0/100 | MC |
| | | **Total** | **19/1/8** | **28** | **22** | **1000** | |

## SEMESTER IV

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| 1. | 22MT401 | Computer Networks and Cybersecurity | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 2. | 22MT402 | Basics of Digital Signal Processing | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 3. | 22XX0XX | Open Elective – I | 1/0/4 or 3/0/0 | 5 or 3 | 3 | 50/50 or 60/40 | OEC |
| 4. | 22MT403 | Microcontroller and Its Applications | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 5. | 22MA402 | Probability and Computational Methods | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 6. | 22MT404 | Sensors, Measurements, and Instrumentation | 3/0/2 | 5 | 4 | 50/50 | PCC |
| 7. | 22MT405 | Microcontroller Laboratory for Mechatronics | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 8. | 22MT406 | Basics of Digital Signal Processing Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 9. | 22MC1XX | Mandatory Course – IV | 2/0/0 | 2 | 0 | 0/100 | MC |
| | | **Total** | **18/1/10 or 20/1/6** | **29 or 27** | **22** | **900** | |

## SEMESTER V

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| 1. | 22MT501 | Machine Design | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 2. | 22MT502 | Robotic Systems | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 3. | 22MT503 | Power Electronics and Drives | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 4. | 22MT9XX | Professional Elective – I | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 5. | 22XX0XX | Open Elective -II | 1/0/4 or 3/0/0 | 5 or 3 | 3 | 50/50 or 60/40 | OEC |
| 6. | 22MT504 | Artificial Intelligence for Robotics | 3/0/2 | 5 | 4 | 50/50 | PCC |
| 7. | 22MT505 | Power Electronics and Drives Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 8. | 22MT506 | Robotic Systems Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 9. | 22MT507 | Mini Project | 0/0/2 | 2 | 1 | 40/60 | PROJ |
| | | **Total** | **16/0/12 or 18/0/8** | **28 or 26** | **22** | **900** | |

## SEMESTER VI

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|---|---|---|---|---|---|---|---|
| 1. | 22MT601 | Autotronics and Vehicle Intelligence | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 2. | 22MT602 | Industrial Management and Professional Ethics | 3/0/0 | 3 | 3 | 60/40 | HSMC |
| 3. | 22MT603 | Hydraulics and Pneumatics System | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 4. | 22MT9XX | Professional Elective – II | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 5. | 22MT9XX | Professional Elective – III | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 6. | 22MTXXX | Emerging Elective- I | 3/0/0 | 3 | 3 | 60/40 | EEC |
| 7. | 22MT604 | Hydraulics and Pneumatics System Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| | | **Total** | **18/0/2** | **20** | **19** | **700** | |

## SEMESTER VII

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|--------|-------------|--------|-------|------------------|--------|---------|----------|
| 1. | 22MT701 | Computer Integrated Manufacturing | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 2. | 22MT702 | Industrial Automation | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 3. | 22MT9XX | Professional Elective – IV | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 4. | 22MT9XX | Professional Elective – V | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 5. | 22MT9XX | Professional Elective – VI | 3/0/0 | 3 | 3 | 60/40 | PEC |
| 6. | 22MTXXX | Emerging Elective – II | 3/0/0 | 3 | 3 | 60/40 | EEC |
| 7. | 22MT703 | Computer Aided Engineering laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 8. | 22MT704 | Industrial Automation Laboratory | 0/0/2 | 2 | 1 | 40/60 | PCC |
| 9. | 22EES01 | Employability Enhancement Skills | - | - | 2 | 0/100 | EES |
| **Total** | | | **18/0/4** | **22** | **22** | **900** | |

## SEMESTER VIII

| S. No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|--------|-------------|--------|-------|------------------|--------|---------|----------|
| 1. | 22MT801 | Industrial Project | 0/0/24 | 24 | 12 | 40/60 | PROJ |
| **Total** | | | **0/0/24** | **24** | **12** | **100** | |

| PROFESSIONAL ELECTIVES (PE) | | | | | | |
|---|---|---|---|---|---|---|
| *VERTICAL 1* | *VERTICAL 2* | *VERTICAL 3* | *VERTICAL 4* | *VERTICAL 5* | *VERTICAL 6* | |
| **APPLIED ROBOTICS** | **DESIGN AND MANUFACTURING** | **SMART MOBILITY SYSTEMS** | **INTELLIGENCE SYSTEMS** | **AUTOMATION** | **AVIONICS AND DRONE TECHNOLOGY** | **EMERGING ELECTIVES** |
| 22MT901- Mobile Robotics | 22MT907- Product design | 22MT913-Advanced Driver Assistance Systems | 22MT919 - Introduction to Machine Learning | 22MT925-Embedded System for Automation | 22MT931-Avionics | 22MT006-Collaborative Robotics |
| 22MT902-Agricultural Robotics and Automation | 22MT908- Robots and system in smart Manufacturing | 22MT914-Vehicle Ergonomics | 22MT920-Principles of AI and Expert Systems | 22MT926-Robotic Process Automation | 22MT932-Drone Technologies | 22MT007-Design Thinking and Entrepreneur Development |
| 22MT903- Bio-Mechatronics | 22MT909- CNC Machines and Part Programming | 22MT915-Autonomous Underwater Vehicles | 22MT921-Condition Monitoring and Fault Diagnostics | 22MT927-Industrial Networking | 22MT933-Navigation and Communication System | 22MT008- Design of Lightweight Electric Hybrid Vehicles |
| 22MT904- Robot Operating System | 22MT910-Additive Manufacturing Processes | 22MT916-Electric and Hybrid Vehicles | 22MT922-Intelligent Control System | 22MT928-Virtual Instrumentation and its Applications | 22MT934-Unmanned Aerial Vehicles | 22MT009-Social Robotics |
| 22MT905- Micro Robotics | 22MT911-Robot and Machine Elements Design | 22MT917-Automobile Engineering | 22MT923-Immersive Technologies and Haptics | 22MT929-Digital Twin and Industry 5.0 | 22MT935- Guidance and Control | 22MT010 Cognitive Robotics |
| 22MT906 Humanoids | 22MT912- Design for X | 22MT918-Battery Management System | 22MT924-Computer Vision and Deep Learning | 22MT930-Internet of Things for Mechatronics | 22MT936-Aircraft Mechatronics | 22MT011-Data Analytics for Robotics and Automation |

| S. No. | Course Code | Course Title | L/T/P | Contact Hrs/Wk | Credits | Category |
|--------|-------------|--------------|-------|----------------|---------|----------|
| Stream I: APPLIED ROBOTICS |||||||
| 1. | 22MT901 | Mobile Robotics | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT902 | Agricultural Robotics and Automation | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT903 | Bio-Mechatronics | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT904 | Robot Operating System | 1/0/4 | 3 | 3 | PEC |
| 5. | 22MT905 | Micro Robotics | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT906 | Humanoids | 3/0/0 | 3 | 3 | PEC |

| S. No | Course Code | Course Title | L/T/P | Contact Hrs/ Wk | Credits | Category |
|-------|-------------|--------------|-------|-----------------|---------|----------|
| Stream II: DESIGN AND MANUFACTURING |||||||
| 1. | 22MT907 | Product design | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT908 | Robots and system in smart Manufacturing | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT909 | CNC Machines and Part Programming | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT910 | Additive Manufacturing Processes | 3/0/0 | 3 | 3 | PEC |
| 5. | 22MT911 | Robot and Machine Elements Design | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT912 | Design for X | 3/0/0 | 3 | 3 | PEC |

| S. No | Course Code | Course Title | L/T/P | Contact Hrs/Wk | Credits | Category |
|-------|-------------|--------------|-------|----------------|---------|----------|
| Stream III: SMART MOBILITY SYSTEMS |||||||
| 1. | 22MT913 | Advanced Driver Assistance Systems | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT914 | Vehicle Ergonomics | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT915 | Autonomous Underwater Vehicles | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT916 | Electric and Hybrid Vehicles | 3/0/0 | 3 | 3 | PEC |
| 5. | 22MT917 | Automobile Engineering | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT918 | Battery Management System | 3/0/0 | 3 | 3 | PEC |

| S. No | Course Code | Course Title | L/T/P | Contact Hrs/Wk | Credits | Category |
|---|---|---|---|---|---|---|
| Stream IV: INTELLIGENCE SYSTEMS | | | | | | |
| 1. | 22MT919 | Introduction to Machine Learning | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT920 | Principles of AI and Expert Systems | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT921 | Condition Monitoring and Fault Diagnostics | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT922 | Intelligent Control System | 3/0/0 | 3 | 3 | PEC |
| 5. | 22MT923 | Immersive Technologies and Haptics | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT924 | Computer Vision and Deep Learning | 3/0/0 | 3 | 3 | PEC |

| S. No | Course Code | Course Title | L/T/P | Contact Hrs/Wk | Credits | Category |
|---|---|---|---|---|---|---|
| Stream V: AUTOMATION | | | | | | |
| 1. | 22MT925 | Embedded System for Automation | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT926 | Robotic Process Automation | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT927 | Industrial Networking | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT928 | Virtual Instrumentation and its Applications | 3/0/0 | 3 | 3 | PEC |
| 5. | 22MT929 | Digital Twin and Industry 5.0 | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT930 | Internet of Things for Mechatronics | 3/0/0 | 3 | 3 | PEC |

| S. No | Course Code | Course Title | L/T/P | Contact Hrs/Wk | Credits | Category |
|---|---|---|---|---|---|---|
| Stream VI: AVIONICS AND DRONE TECHNOLOGY | | | | | | |
| 1. | 22MT931 | Avionics | 3/0/0 | 3 | 3 | PEC |
| 2. | 22MT932 | Drone Technologies | 3/0/0 | 3 | 3 | PEC |
| 3. | 22MT933 | Navigation and Communication System | 3/0/0 | 3 | 3 | PEC |
| 4. | 22MT934 | Unmanned Aerial Vehicles | 3/0/0 | 3 | 3 | PEC |
| 5. | 22MT935 | Guidance and Control | 3/0/0 | 3 | 3 | PEC |
| 6. | 22MT936 | Aircraft Mechatronics | 3/0/0 | 3 | 3 | PEC |

## OPEN ELECTIVES (OE): Offered to other departments

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|--------|-------------|--------------|-------|------------------|---------|----------|
| 1. | 22MT001 | Basics of Robotics | 3/0/0 | 3 | 3 | OEC |
| 2. | 22MT002 | Basics of Automation Systems | 3/0/0 | 3 | 3 | OEC |
| 3. | 22MT003 | Smart Sensors for IoT | 3/0/0 | 3 | 3 | OEC |
| 4. | 22MT004 | Drone Technology | 3/0/0 | 3 | 3 | OEC |
| 5. | 22MT005 | Fundamentals of Arduino and Raspberry Pi | 3/0/0 | 3 | 3 | OEC |

## EMERGING ELECTIVES (EE): Offered to MCT

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|--------|-------------|--------------|-------|------------------|---------|----------|
| 1. | 22MT006 | Collaborative Robotics | 3/0/0 | 3 | 3 | EEC |
| 2. | 22MT007 | Design Thinking and Entrepreneur Development | 3/0/0 | 3 | 3 | EEC |
| 3. | 22MT008 | Design of Lightweight Electric Hybrid Vehicles | 3/0/0 | 3 | 3 | EEC |
| 4. | 22MT009 | Social Robotics | 3/0/0 | 3 | 3 | EEC |
| 5. | 22MT010 | Cognitive Robotics | 3/0/0 | 3 | 3 | EEC |
| 6. | 22MT011 | Data Analytics for Robotics and Automation | 3/0/0 | 3 | 3 | EEC |

## MANDATORY COURSES (MC):

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|--------|-------------|--------------|-------|------------------|---------|----------|
| 1. | 22MC101 | Induction Programme | 3 weeks | | 0 | MC |
| 2. | 22MC102 | Environmental Sciences | 2/0/0 | 2 | 0 | MC |
| 3. | 22MC103 | Soft Skills | 2/0/0 | 2 | 0 | MC |
| 4. | 22MC104 | Management Organizational Behavior | 2/0/0 | 2 | 0 | MC |
| 5. | 22MC105 | General Aptitude | 2/0/0 | 2 | 0 | MC |
| 6. | 22MC106 | Life Skills and Ethics | 2/0/0 | 2 | 0 | MC |
| 7. | 22MC107 | Stress Management | 2/0/0 | 2 | 0 | MC |
| 8. | 22MC108 | Constitution of India | 2/0/0 | 2 | 0 | MC |
| 9. | 22MC109 | Essence of Indian Traditional Knowledge | 2/0/0 | 2 | 0 | MC |
| 10. | 22MC110 | Biology | 2/0/0 | 2 | 0 | MC |

## VALUE ADDED COURSES (VAC):

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|---|---|---|---|---|---|---|
| 1 | 22VA600 | Solidworks | 0/0/2 | 2 | 1 | VAC |
| 2 | 22VA601 | MATLAB programming | 0/0/2 | 2 | 1 | VAC |
| 3 | 22VA602 | Android Studio | 0/0/2 | 2 | 1 | VAC |
| 4 | 22VA603 | Intellectual Property Rights & Entrepreneurship | 2/0/0 | 2 | 2 | VAC |
| 5 | 22VA604 | Financial Literacy | 2/0/0 | 2 | 2 | VAC |
| 6 | 22VA605 | Automation Studio | 0/0/2 | 2 | 1 | VAC |
| 7 | 22VA606 | Electric Vehicle Design & Fabrication | 2/0/0 | 2 | 2 | VAC |
| 8 | 22VA607 | Mastering Embedded Systems: Unleash the Power of Controller Boards | 0/0/2 | 2 | 1 | VAC |
| 9 | 22VA608 | Programming with LabVIEW | 0/0/2 | 2 | 1 | VAC |

## HUMANITIES AND MANAGEMENT COURSES (11 Credits)

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|---|---|---|---|---|---|---|
| 1. | 22GE201 | Universal Human Values | 3/0/0 | 3 | 3 | HSMC |
| 2. | 22EN101 | Technical Communication Skills | 2/0/2 | 4 | 3 | HSMC |
| 3. | 22MT602 | Industrial Management and Professional Ethics | 3/0/0 | 3 | 3 | HSMC |
| 4. | 22TA101 | Heritage of Tamils | 1/0/0 | 1 | 1 | HSMC |
| 5. | 22TA201 | Tamils and Technology | 1/0/0 | 1 | 1 | HSMC |

## BASIC SCIENCE COURSES (24 Credits)

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|---|---|---|---|---|---|---|
| 1. | 22MA105 | Matrices and Calculus I | 3/1/0 | 4 | 4 | BSC |
| 2. | 22MA204 | Calculus II and Transforms | 3/1/0 | 4 | 4 | BSC |
| 3. | 22MA305 | Fourier Series and Partial Differential Equations | 3/1/0 | 4 | 4 | BSC |

| 4. | 22CH101 | Engineering Chemistry | 3/0/2 | 5 | 4 | BSC |
|---|---|---|---|---|---|---|
| 5. | 22PH104 | Applied Physics | 3/0/2 | 5 | 4 | BSC |
| 6. | 22MA402 | Probability and Computational Methods | 3/1/0 | 4 | 4 | BSC |

## ENGINEERING SCIENCE COURSES (25 Credits)

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|---|---|---|---|---|---|---|
| 1. | 22MT101 | Production Technology | 3/0/0 | 3 | 3 | ESC |
| 2. | 22CS101 | Problem Solving using C++ | 3/0/2 | 5 | 4 | ESC |
| 3. | 22MT102 | Computer Aided Drawing Laboratory for Mechatronics | 0/0/3 | 3 | 1.5 | ESC |
| 4. | 22MT103 | Production Technology Laboratory | 0/0/3 | 3 | 1.5 | ESC |
| 5. | 22MT201 | Applied Mechanics | 3/0/0 | 3 | 3 | ESC |
| 6. | 22MT202 | Analog and Digital Electronics | 3/0/0 | 3 | 3 | ESC |
| 7. | 22CS201 | Data Structures and Algorithms | 3/0/2 | 5 | 4 | ESC |
| 8. | 22MT203 | Analog and Digital Electronics Laboratory | 0/0/2 | 2 | 1 | ESC |
| 9. | 22ITXXX | Python Programming | 1/0/4 | 5 | 3 | ESC |

## PROFESSIONAL CORE COURSES (59 Credits)

| S. No. | Course Code | Course Title | L/T/P | Contact hrs./Wk. | Credits | Category |
|---|---|---|---|---|---|---|
| 1. | 22MT301 | Control Systems for Mechatronics | 3/0/0 | 3 | 3 | PCC |
| 2. | 22MT302 | Electrical Machines for Mechatronics | 3/0/0 | 3 | 3 | PCC |
| 3. | 22MT303 | Design and Modelling of Mechatronics Systems | 3/0/0 | 3 | 3 | PCC |
| 4. | 22MT304 | Theory of Machines | 3/0/0 | 3 | 3 | PCC |
| 5. | 22MT305 | Electrical Machines for Mechatronics Laboratory | 0/0/2 | 2 | 1 | PCC |
| 6. | 22MT306 | Mechanics of Machines and Materials Laboratory | 0/0/2 | 2 | 1 | PCC |
| 7. | 22MT401 | Computer Networks and Cyber Security | 3/0/0 | 3 | 3 | PCC |
| 8. | 22MT402 | Basics of Digital Signal Processing | 3/0/0 | 3 | 3 | PCC |
| 9. | 22MT403 | Microcontroller and Its Applications | 3/0/0 | 3 | 3 | PCC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10. | 22MT404 | Sensors, Measurements, and Instrumentation | 3/0/2 | 5 | 4 | PCC |
| 11. | 22MT405 | Microcontroller Laboratory for Mechatronics | 0/0/2 | 2 | 1 | PCC |
| 12. | 22MT406 | Basics of Digital Signal Processing Laboratory | 0/0/2 | 2 | 1 | PCC |
| 13. | 22MT501 | Machine Design | 3/0/0 | 3 | 3 | PCC |
| 14. | 22MT502 | Robotic Systems | 3/0/0 | 3 | 3 | PCC |
| 15. | 22MT503 | Power Electronics and Drives | 3/0/0 | 3 | 3 | PCC |
| 16. | 22MT504 | Artificial Intelligence for Robotics | 3/0/2 | 5 | 4 | PCC |
| 17. | 22MT505 | Power Electronics and Drives Laboratory | 0/0/3 | 3 | 1.5 | PCC |
| 18. | 22MT506 | Robotic Systems Laboratory | 0/0/3 | 3 | 1.5 | PCC |
| 19. | 22MT601 | Autotronics and Vehicle Intelligence | 3/0/0 | 3 | 3 | PCC |
| 20. | 22MT603 | Hydraulics and Pneumatics System | 3/0/0 | 3 | 3 | PCC |
| 21. | 22MT604 | Hydraulics and Pneumatics System Laboratory | 0/0/2 | 2 | 1 | PCC |
| 22. | 22MT701 | Computer Integrated Manufacturing | 3/0/0 | 3 | 3 | PCC |
| 23. | 22MT702 | Industrial Automation | 3/0/0 | 3 | 3 | PCC |
| 24. | 22MT703 | Computer Aided Engineering laboratory | 0/0/2 | 2 | 1 | PCC |
| 25. | 22MT704 | Industrial Automation Laboratory | 0/0/2 | 2 | 1 | PCC |

## Category wise Comparison of Courses and Credits

| S. No. | Category | AICTE- MCT 2020 | | SKCET-MCT R2022 | |
|---|---|---|---|---|---|
| | | No of Courses | No. of Credits | No of Courses | No. of Credits |
| 1. | Humanities (HSMC) | 4 | 12 | 5 | 11 |
| 2. | Basic Sciences (BSC) | 5 | 21 | 6 | 24 |
| 3. | Engineering Sciences (ESC) | | | 9 | 24 |
| 4. | Professional Core (PCC) | 44 | 101 | 25 | 59 |
| 5. | Professional Electives (PEC) | 2 | 6 | 6 | 18 |
| 6. | Open Electives (OEC)/ Emerging Elective (EEC) | 2 | 6 | 4 | 12 |
| 7. | Project Work (PROJ) | 7 | 17 | 2 | 13 |
| 8. | Employability Enhancement Skill (EES) | | | 1 | 2 |
| 9. | Mandatory Courses (MC) | 3 | - | 4 | - |
| | **Total** | **67** | **163** | **63** | **163** |

**Scheme of Credit Distribution- Summary**

| S. No | Stream | Credits/Semester | | | | | | | | Cre dits | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | | |
| 1. | Humanities (HSMC) | 3 | 4 | 1 | | | 3 | | | 11 | 6.75 |
| 2. | Basic Sciences (BSC) | 8 | 8 | 4 | 4 | | | | | 24 | 14.72 |
| 3. | Engineering Sciences (ESC) | 10 | 11 | 3 | | | | | | 24 | 14.72 |
| 4. | Professional Core (PCC) | | | 14 | 15 | 15 | 7 | 8 | | 59 | 36.20 |
| 5. | Professional Electives (PEC) | | | | | 3 | 6 | 9 | | 18 | 11.04 |
| 6. | Open Electives (OEC)/ Emerging Elective (EEC) | | | | 3 | 3 | 3 | 3 | | 12 | 7.36 |
| 7. | Project Work (PROJ) | | | | | 1 | | | 12 | 13 | 7.98 |
| 8. | Employability Enhancement Skill (EES) | | | | | | | 2 | | 2 | 1.23 |
| 9. | Mandatory Courses (MC) | | | | | | | | | | |
| | **Total** | **21** | **23** | **22** | **22** | **22** | **19** | **22** | **12** | **163** | **100** |