



**SIPNA COLLEGE OF ENGINEERING & TECHNOLOGY, AMRAVATI**

**SoE No.  
24MTME-01**

**An Autonomous Institute Affiliated to  
Sant Gadge Baba Amravati University, Amravati, Maharashtra (India)  
(Approved by AICTE, New Delhi and Recognized by DTE, Maharashtra)**

**(Accredited With 'A+' Grade by NAAC)**

**Master of Technology (M. Tech.)**

**Programme Scheme of Examination (SoE)**

**Department of Mechanical Engineering**

**M. Tech. Mechanical (Computer Integrated Manufacturing)**

**(Semester Pattern)**

**Effective from Academic Year 2024-25**

**Prepared by: Board of Studies - Mechanical Engineering**

**Approved by: Academic Council - Sipna COET, Amravati**



|                                      |                           |                                      |                        |                |
|--------------------------------------|---------------------------|--------------------------------------|------------------------|----------------|
|                                      |                           |                                      | 31/08/2024             | 1.00           |
| <b>Chairman<br/>Board of Studies</b> | <b>Dean<br/>Academics</b> | <b>Chairman<br/>Academic Council</b> | <b>Date of Release</b> | <b>Version</b> |



**Category-wise Course Master Lists**

**Course Category: Programme Core Course (PCC)**

| Sr. No. | Course Name                             | Course Code  |
|---------|---|--------------|
| 1       | Computer applications in Design         | MTMEPC01ME1T |
| 2       | Computer Aided Manufacturing            | MTMEPC02ME1T |
| 3       | Computer Assisted Production Management | MTMEPC03ME1T |
| 4       | Flexible Manufacturing System           | MTMEPC05ME2T |
| 5       | Industrial Robotics                     | MTMEPC06ME2T |
| 6       | Lean Manufacturing                      | MTMEPC07ME2T |

**Course Category: Programme Elective Course (PEC)**

| Sr. No. | Course Name                               | Course Code  |
|---------|---|--------------|
| 1       | Mechatronics                              | MTMEPE01ME1T |
| 2       | Mechatronics Lab.                         | MTMEPE02ME1P |
| 3       | Design for Manufacturing                  | MTMEPE03ME1T |
| 4       | Design for Manufacturing Lab.             | MTMEPE04ME1P |
| 5       | Advances in Manufacturing Technology      | MTMEPE05ME1T |
| 6       | Advances in Manufacturing Technology Lab. | MTMEPE06ME1P |
| 7       | Concurrent Engineering                    | MTMEPE07ME1T |
| 8       | Management Information Systems            | MTMEPE08ME1T |
| 9       | Virtual Manufacturing                     | MTMEPE09ME1T |
| 10      | Rapid Prototyping And Tooling             | MTMEPE10ME2T |
| 11      | Rapid Prototyping And Tooling Lab.        | MTMEPE11ME2P |
| 12      | Competitive Manufacturing                 | MTMEPE12ME2T |
| 13      | Competitive Manufacturing Lab.            | MTMEPE13ME2P |
| 14      | Manufacturing System Simulation           | MTMEPE14ME2T |
| 15      | Manufacturing System Simulation Lab.      | MTMEPE15ME2P |
| 16      | Product Life-Cycle Management             | MTMEPE16ME2T |
| 17      | Advances in Metrology and Inspection      | MTMEPE17ME2T |
| 18      | Supply Chain Management                   | MTMEPE18ME2T |

**Research Methodology**

| Sr. No. | Course Name          | Course Code  |
|---------|----------------------|--------------|
| 1       | Research Methodology | MTMERM01ME1T |



### Semester - I

| Scheme for First Year M. Tech. in Mechanical (CIM) (Semester -I) |   |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |
|--|---|--------------|----------------------------|----------|----------|-----------|-----------|-------------------|------------|------------|----------------------|-----------|------------|-------------------|----------------|
| Sr. No.  | Course Name                                     | Course Code  | Course Plan per Week (Hrs) |          |          |           | Credits   | Theory Evaluation |            |            | Practical Evaluation |           | Total      | Min Passing Marks | ESE Time (Hrs) |
|  |   |              | L                          | P        | T        | Hrs       |           | MSE               | TA         | ESE        | INT                  | EXT       |            |                   |                |
| <b>Core Courses</b>  |   |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |
| 1  | Computer applications in Design                 | MTMEPC01ME1T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| 2  | Computer Aided Manufacturing                    | MTMEPC02ME1T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| 3  | Computer Assisted Production Management         | MTMEPC03ME1T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| <b>Elective Courses</b>  |   |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |
| 4  | Program Elective I                              | --           | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| 5  | Program Elective II                             | --           | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| <b>Laboratory Courses</b>  |   |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |
| 6  | Laboratory I<br>Computer applications in Design | MTMEPC04ME1P | -                          | 2        | -        | 2         | 1         | -                 | -          | -          | 25                   | 25        | 50         | 25                | -              |
| 7  | Laboratory II<br>(Based on Program Elective I)  | --           | -                          | 2        | -        | 2         | 1         | -                 | -          | -          | 25                   | 25        | 50         | 25                | -              |
| <b>Research Methodology</b>                                      |   |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |
| 8  | Research Methodology                            | MTMERM01ME1T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |
| <b>TOTAL</b>   |   |              | <b>18</b>                  | <b>4</b> | <b>-</b> | <b>22</b> | <b>20</b> | <b>120</b>        | <b>120</b> | <b>360</b> | <b>50</b>            | <b>50</b> | <b>700</b> | <b>350</b>        | <b>-</b>       |

L: Lecture    P: Practical    T : Tutorial    MSE: Mid Semester Exam    ESE: End Semester Exam    TA: Teacher Assessment    INT: Internal    EXT: External

#### Programme Elective Courses (PEC-I) Semester-I (Choose any one course with corresponding Lab.)

| Sr. No. | Course Name                               | Course Code  |
|---------|---|--------------|
| 1       | Mechatronics                              | MTMEPE01ME1T |
| 2       | Mechatronics Lab.                         | MTMEPE02ME1P |
| 3       | Design for Manufacturing                  | MTMEPE03ME1T |
| 4       | Design for Manufacturing Lab.             | MTMEPE04ME1P |
| 5       | Advances in Manufacturing Technology      | MTMEPE05ME1T |
| 6       | Advances in Manufacturing Technology Lab. | MTMEPE06ME1P |

#### Programme Elective Courses (PEC-II) Semester-I (Choose any one course)

| Sr. No. | Course Name                    | Course Code  |
|---------|--------------------------------|--------------|
| 1       | Concurrent Engineering         | MTMEPE07ME1T |
| 2       | Management Information Systems | MTMEPE08ME1T |
| 3       | Virtual Manufacturing          | MTMEPE09ME1T |

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### Semester - II

| Scheme for First Year M. Tech. in Mechanical (CIM) (Semester -II) |  |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |  |
|---|--|--------------|----------------------------|----------|----------|-----------|-----------|-------------------|------------|------------|----------------------|-----------|------------|-------------------|----------------|--|
| Sr. No.   | Course Name                                      | Course Code  | Course Plan per Week (Hrs) |          |          |           | Credits   | Theory Evaluation |            |            | Practical Evaluation |           | Total      | Min Passing Marks | ESE Time (Hrs) |  |
|   |  |              | L                          | P        | T        | Hrs       |           | MSE               | TA         | ESE        | INT                  | EXT       |            |                   |                |  |
| <b>Core Courses</b>   |  |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |  |
| 1   | Flexible Manufacturing System                    | MTMEPC05ME2T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |  |
| 2   | Industrial Robotics                              | MTMEPC06ME2T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |  |
| 3   | Lean Manufacturing                               | MTMEPC07ME2T | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |  |
| <b>Elective Courses</b>   |  |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |  |
| 4   | Program Elective III                             | --           | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |  |
| 5   | Program Elective IV                              | --           | 3                          | -        | -        | 3         | 3         | 20                | 20         | 60         | -                    | -         | 100        | 50                | 2.5            |  |
| <b>Laboratory Courses</b>   |  |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |  |
| 6   | Laboratory III<br>Industrial Robotics            | MTMEPC08ME2P | -                          | 2        | -        | 2         | 1         | -                 | -          | -          | 25                   | 25        | 50         | 25                | -              |  |
| 7   | Laboratory IV<br>(Based on Program Elective-III) | --           | -                          | 2        | -        | 2         | 1         | -                 | -          | -          | 25                   | 25        | 50         | 25                | -              |  |
| <b>Technical Paper Writing</b>                                    |  |              |                            |          |          |           |           |                   |            |            |                      |           |            |                   |                |  |
| 8   | Seminar  | MTMESE01ME2P | -                          | -        | 2        | 2         | 2         | -                 | -          | -          | 50                   |           | 50         | 25                | -              |  |
| 9   | Technical Paper Writing                          | MTMETP01ME2P | -                          | -        | 1        | 1         | 1         | -                 | -          | -          | 50                   |           | 50         | 25                | -              |  |
| <b>TOTAL</b>  |  |              | <b>15</b>                  | <b>4</b> | <b>3</b> | <b>22</b> | <b>20</b> | <b>100</b>        | <b>100</b> | <b>300</b> | <b>150</b>           | <b>50</b> | <b>700</b> | <b>350</b>        | <b>-</b>       |  |

L: Lecture P: Practical T: Tutorial MSE: Mid Semester Exam ESE: End Semester Exam TA: Teacher Assessment INT: Internal EXT: External

#### Programme Elective Courses (PEC-III) Semester-III (Choose any one course with corresponding Lab.)

| Sr. No. | Course Name                          | Course Code  |
|---------|--------------------------------------|--------------|
| 1       | Rapid Prototyping And Tooling        | MTMEPE10ME2T |
| 2       | Rapid Prototyping And Tooling Lab.   | MTMEPE11ME2P |
| 3       | Competitive Manufacturing            | MTMEPE12ME2T |
| 4       | Competitive Manufacturing Lab.       | MTMEPE13ME2P |
| 5       | Manufacturing System Simulation      | MTMEPE14ME2T |
| 6       | Manufacturing System Simulation Lab. | MTMEPE15ME2P |

#### Programme Elective Courses (PEC-IV) Semester-III (Choose any one course)

| Sr. No. | Course Name                          | Course Code  |
|---------|--------------------------------------|--------------|
| 1       | Product Life-Cycle Management        | MTMEPE16ME2T |
| 2       | Advances in Metrology and Inspection | MTMEPE17ME2T |
| 3       | Supply Chain Management              | MTMEPE18ME2T |

**Exit Point:** After completion of First Year, student must complete minimum 10 credit online course (NPTEL/MOOCs/SWAYAM) suitable for Mechanical Engineering domain to qualify for Post-Graduate Diploma in Mechanical Engineering

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### Semester - III

| Scheme for Second Year M. Tech. in Mechanical (CIM) (Semester -III) |                        |   |                            |           |          |           |           |                   |    |     |                      |     |            |                   |                |
|---|------------------------|---|----------------------------|-----------|----------|-----------|-----------|-------------------|----|-----|----------------------|-----|------------|-------------------|----------------|
| Sr No   | Course Name            | Course Code   | Course Plan per Week (Hrs) |           |          |           | Credits   | Theory Evaluation |    |     | Practical Evaluation |     | Total      | Min Passing Marks | ESE Time (Hrs) |
|   |                        |   | L                          | P         | T        | Hrs       |           | MSE               | TA | ESE | INT                  | EXT |            |                   |                |
| <b>Dissertation</b>   |                        |   |                            |           |          |           |           |                   |    |     |                      |     |            |                   |                |
| 1   | Seminar II             | MTMEDI01ME3P  | -                          | 20        | -        | 20        | 10        | -                 | -  | -   | 100                  | -   | 100        | 50                | -              |
| 2   | Paper Publication I    | MTMEDI02ME3P  | -                          | -         | 2        | 2         | 2         | -                 | -  | -   | 50                   | -   | 50         | 25                | -              |
| 3   | Dissertation (Phase I) | MTMEDI03ME3P  | -                          | -         | 4        | 4         | 4         | -                 | -  | -   | 50                   | -   | 50         | 25                | -              |
| <b>TOTAL</b>  |                        |   | -                          | <b>20</b> | <b>6</b> | <b>26</b> | <b>16</b> | -                 | -  | -   | <b>200</b>           | -   | <b>200</b> | <b>100</b>        | -              |
| <b>Seminar II</b>   |                        | Based on literature survey, objectives of proposed work, methodology etc. |                            |           |          |           |           |                   |    |     |                      |     |            |                   |                |
| <b>Paper Publication I</b>  |                        | Survey paper based on proposed work.                                      |                            |           |          |           |           |                   |    |     |                      |     |            |                   |                |

### Semester - IV

| Scheme for Second Year M. Tech. in Mechanical (CIM) (Semester -IV) |                         |   |                            |           |           |           |           |                   |    |     |                      |            |            |                   |                |
|--|-------------------------|---|----------------------------|-----------|-----------|-----------|-----------|-------------------|----|-----|----------------------|------------|------------|-------------------|----------------|
| Sr No  | Course Name             | Course Code                                 | Course Plan per Week (Hrs) |           |           |           | Credits   | Theory Evaluation |    |     | Practical Evaluation |            | Total      | Min Passing Marks | ESE Time (Hrs) |
|  |                         |   | L                          | P         | T         | Hrs       |           | MSE               | TA | ESE | INT                  | EXT        |            |                   |                |
| <b>Dissertation</b>  |                         |   |                            |           |           |           |           |                   |    |     |                      |            |            |                   |                |
| 1  | Seminar III             | MTMEDI04ME4P                                | -                          | 24        | -         | 24        | 12        | -                 | -  | -   | 100                  | 200        | 300        | 150               | -              |
| 2  | Paper Publication II    | MTMEDI05ME4P                                | -                          | -         | 2         | 2         | 2         | -                 | -  | -   | 50                   | -          | 50         | 25                | -              |
| 3  | Pre-Defense             | MTMEDI06ME4P                                | -                          | -         | 4         | 4         | 4         | -                 | -  | -   | 50                   | -          | 50         | 25                | -              |
| 4  | Dissertation (Phase II) | MTMEDI07ME4P                                | -                          | -         | 6         | 6         | 6         | -                 | -  | -   | 100                  | -          | 100        | 50                | -              |
| <b>TOTAL</b>   |                         |   | -                          | <b>24</b> | <b>12</b> | <b>36</b> | <b>24</b> | -                 | -  | -   | <b>300</b>           | <b>200</b> | <b>500</b> | <b>250</b>        | -              |
| <b>Seminar III</b>   |                         | Based on dissertation                       |                            |           |           |           |           |                   |    |     |                      |            |            |                   |                |
| <b>Paper Publication II</b>  |                         | Result-oriented paper based on dissertation |                            |           |           |           |           |                   |    |     |                      |            |            |                   |                |

For Syllabus of Semester I and Semester II – [Click Here](#)

  
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**Definition of Subject Code:**

| 1 <sup>st</sup> & 2 <sup>nd</sup> letter<br>(Degree Program) | 3 <sup>rd</sup> & 4 <sup>th</sup> letter<br>Applicable to which students   | 5 <sup>th</sup> & 6 <sup>th</sup> letter<br>(Course category)  | 7 <sup>th</sup> & 8 <sup>th</sup> letter<br>(Sr. no. of Subject)                                      | 9 <sup>th</sup> & 10 <sup>th</sup> Letters<br>Teaching Deptt  | 11 <sup>th</sup> letter<br>(Semester)  | 12 <sup>th</sup> letter<br>(Theory or Practical) |
|--|--|--|---|---|--|--|
| <b>BT</b>  | <b>AL</b>  | <b>BS</b>  | <b>01</b>   | <b>SH</b>   | <b>1</b>   | <b>T</b>   |
| <b>MT: M.Tech.</b>   | <b>AL:</b> All branches<br><b>CS:</b> Computer Science and Engineering<br><b>IT:</b> Information Technology<br><b>ME:</b> Mechanical Engineering<br><b>ET:</b> Electronics and Telecommunication Engineering<br><b>CE:</b> Civil Engineering | <b>PC:</b> Program Core<br><b>PE:</b> Program elective<br><b>RM:</b> Research Methodology<br><b>TP:</b> Technical Paper<br><b>SE:</b> Seminar<br><b>DI:</b> Dissertation | Sr. no. of course in the particular Course category from 1 <sup>st</sup> to 4 <sup>th</sup> semester. | <b>CS:</b> Computer Science and Engineering<br><b>IT:</b> Information Technology<br><b>ME:</b> Mechanical Engineering<br><b>ET:</b> Electronics and Telecommunication Engineering<br><b>CE:</b> Civil Engineering | 1. First Semester<br>2. Second Semester<br>3. Third Semester<br>4. Fourth Semester | <b>T:</b> Theory<br><b>P:</b> Practical          |

  
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