

# Indian Institute of Technology Tirupati

## B.Tech. Curriculum: Mechanical Engineering for students Admitted from Academic Year 2019-2020 onwards

### Semester-I

| S.No.                | Course Code       | Course Name  | Category    | L-T-P-C            | Course Code (prior to Jul 2022) | Senate  |
|----------------------|-------------------|--|-------------|--------------------|---------------------------------|---------|
| 1.                   | ES103M/<br>EA101M | Introduction to Programming/<br>Engineering Drawing                    | BET/<br>BES | 2-0-3-4<br>1-0-3-3 | ES1101/ EA1101                  | 14<br>4 |
| 2.                   | CY101L/<br>CY102L | Physical and Theoretical Chemistry/<br>Organic and Inorganic Chemistry | SCY         | 2-1-0-3            | CY1101/ CY1202                  | 4<br>4  |
| 3.                   | ES101M            | Concepts in Engineering and Design                                     | BET         | 1-0-2-2            | ID1101                          | 4       |
| 4.                   | MA101L            | Calculus   | SMA         | 3-1-0-4            | MA1101                          | 4       |
| 5.                   | PH101L            | Introduction to Classical Mechanics                                    | SPH         | 2-1-0-3            | PH1101                          | 4       |
| 6.                   | PH103P/<br>CY103P | Physics Laboratory/<br>Chemistry Laboratory                            | SPH/<br>SCY | 0-0-3-2            | PH1103/ CY1204                  | 4<br>4  |
| 7.                   | EA102P            | Workshop-I   | BES         | 0-0-3-2            | EA1103                          | 4       |
| 8.                   | HS10XN            | Language Course (Pass/Fail)  | HPF         | 2-0-0-2            | HS110X                          |         |
| <b>Total Credits</b> |                   |  |             | <b>22/21</b>       |                                 |         |

### Approved Language Courses

| Course Code | Course Name                      | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|-------------|----------------------------------|----------|---------|---------------------------------|--------|
| HS101N      | Proficiency in English           | HPF      | 2-0-0-2 | HS1101                          | 4      |
| HS102N      | Basic Course in German           |          |         | HS1103                          | 6      |
| HS103N      | Basic Course in Japanese         |          |         | HS1105                          | 6      |
| HS104N      | Basic Course in Sanskrit         |          |         | HS1107                          | 6      |
| HS105N      | Basic Course in Spanish Language |          |         | HS1109                          | 9      |

### Semester-II

| S.No.                | Course Code       | Course Name  | Category    | L-T-P-C            | Course Code (prior to Jul 2022) | Senate  |
|----------------------|-------------------|--|-------------|--------------------|---------------------------------|---------|
| 1.                   | ES103M/<br>EA101M | Introduction to Programming/<br>Engineering Drawing                    | BET/<br>BES | 2-0-3-4<br>1-0-3-3 | ES1101/<br>EA1101               | 14<br>4 |
| 2.                   | CY101L/<br>CY102L | Physical and Theoretical Chemistry/<br>Organic and Inorganic Chemistry | SCY         | 2-1-0-3            | CY1101/<br>CY1202               | 4<br>4  |
| 3.                   | ES201L            | Engineering Mechanics  | BET         | 3-1-0-4            | ES2101                          | 4       |
| 4.                   | MA102L            | Differential Equations and Matrices                                    | SMA         | 3-1-0-4            | MA1202                          | 4       |
| 5.                   | PH102L            | Introduction to Electrodynamics<br>and Quantum Mechanics               | SPH         | 2-1-0-3            | PH1202                          | 4       |
| 6.                   | PH103P/<br>CY103P | Physics Laboratory/<br>Chemistry Laboratory                            | SPH/SCY     | 0-0-3-2            | PH1103/<br>CY1204               | 4<br>4  |
| 7.                   | EA103P            | Workshop-II  | BES         | 0-0-3-2            | EA1202                          | 4       |
| <b>Total Credits</b> |                   |  |             | <b>21/22</b>       |                                 |         |

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### Semester-III

| S. No.               | Course Code       | Course Name                               | Category    | L-T-P-C             | Course Code (prior to Jul 2022) | Senate  |
|----------------------|-------------------|---|-------------|---------------------|---------------------------------|---------|
| 1.                   | ES203L/<br>ES202L | Life Sciences/<br>Ecology and Environment | SLS/<br>BET | 2-0-0-2/<br>2-0-0-2 | BS2101/<br>ES2103               | 9/<br>8 |
| 2.                   | ES102L            | Basic Electrical Engineering              | BET         | 3-1-0-4             | ES1201                          | 8       |
| 3.                   | ME201L            | Thermodynamics                            | PMT         | 2-1-0-3             | ME2101                          | 8       |
| 4.                   | ME202M            | Strength of Materials                     | PMT         | 2-1-2-4             | ME2103                          | 8       |
| 5.                   | ME203M            | Material Science and Engineering          | PMT         | 3-0-2-4             | ME2105                          | 8       |
| 6.                   | MAE1              | Mathematics Elective-1                    | SMA         | 3-0-0-3             |                                 |         |
| 7.                   | HSE1              | Humanities Elective-1                     | HSS         | 3-0-0-3             |                                 |         |
| <b>Total Credits</b> |                   |   |             | <b>23</b>           |                                 |         |

### Semester-IV

| S.No.                | Course Code       | Course Name                               | Category    | L-T-P-C             | Course Code (prior to Jul 2022) | Senate  |
|----------------------|-------------------|---|-------------|---------------------|---------------------------------|---------|
| 1.                   | ES202L/<br>ES203L | Ecology and Environment/<br>Life Sciences | BET/<br>SLS | 2-0-0-2/<br>2-0-0-2 | ES2103/<br>BS2101               | 8/<br>9 |
| 2.                   | ME204M            | Fluid Mechanics and Hydraulic<br>Machines | PMT         | 2-1-2-4             | ME2202                          | 8       |
| 3.                   | ME206M            | Manufacturing Technology                  | PMT         | 3-0-2-4             | ME2204                          | 8       |
| 4.                   | ME205M            | Kinematics and Dynamics of<br>Machines    | PMT         | 2-1-2-4             | ME2206                          | 8       |
| 5.                   | MAE2              | Mathematics Elective-2                    | SMA         | 3-0-0-3             |                                 |         |
| 6.                   | HSE2              | Humanities Elective-2                     | HSS         | 3-0-0-3             |                                 |         |
| <b>Total Credits</b> |                   |   |             | <b>20</b>           |                                 |         |

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## B.Tech. Curriculum: Mechanical Engineering for students Admitted from Academic Year 2019-2020 onwards

### Semester-V

| S. No.               | Course Code | Course Name                           | Category | L-T-P-C   | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|---------------------------------------|----------|-----------|---------------------------------|--------|
| 1.                   | ME303M      | Heat and Mass Transfer                | PMT      | 3-1-2-5   | ME3101                          | 8      |
| 2.                   | ME301M      | Machining Processes                   | PMT      | 3-0-3-5   | ME3103                          | 8      |
| 3.                   | ME302L      | Design of Machine Elements            | PMT      | 3-1-0-4   | ME3105                          | 8      |
| 4.                   | ME304M      | Mechanical Measurements and Metrology | PMT      | 3-0-2-4   | ME3107                          | 8      |
| 5.                   | FRE1        | Free Elective-1                       | FRE      | 3-0-0-3   |                                 |        |
| <b>Total Credits</b> |             |                                       |          | <b>21</b> |                                 |        |

### Semester-VI

| S.No.                | Course Code | Course Name                    | Category | L-T-P-C   | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|--------------------------------|----------|-----------|---------------------------------|--------|
| 1.                   | ME305L      | Applied Thermal Engineering    | PMT      | 3-1-0-4   | ME3202                          | 8      |
| 2.                   | ME307M      | Vibrations and Control         | PMT      | 3-0-2-4   | ME3204                          | 8      |
| 3.                   | ME306P      | Machine Drawing                | PML      | 0-0-6-4   | ME3292                          | 8      |
| 4.                   | DPE1        | Department Elective-1          | PMT      | 3-0-0-3   |                                 |        |
| 5.                   | FRE2        | FreeElective-2                 | FRE      | 3-0-0-3   |                                 |        |
| 6.                   | HSE3        | Humanities Elective-3          | HSS      | 3-0-0-3   |                                 |        |
| <b>SUMMER</b>        |             |                                |          |           |                                 |        |
| 7.                   | ME391G      | Industrial/Research Internship | PIT      | ---2      | IT3202                          | 1      |
| <b>Total Credits</b> |             |                                |          | <b>23</b> |                                 |        |

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#### Semester-VII

| S. No.               | Course Code | Course Name               | Category | L-T-P-C   | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|---------------------------|----------|-----------|---------------------------------|--------|
| 1.                   | ME401M      | Energy Conversion Systems | PMT      | 2-1-3-5   | ME4101                          | 8      |
| 2.                   | ME402L      | Operations Research       | PMT      | 2-1-0-3   | ME4103                          | 8      |
| 3.                   | ME491G      | Project Phase-I           | PMP      | ---3      | ME4150                          | 1      |
| 4.                   | DPE2        | Department Elective-2     | PMT      | 3-0-0-3   |                                 |        |
| 5.                   | FRE3        | Free Elective-3           | FRE      | 3-0-0-3   |                                 |        |
| 6.                   | ME493N      | Industrial Lecture        | PIL      | 1-0-0-1   | IL4101                          | 1      |
| <b>Total Credits</b> |             |                           |          | <b>18</b> |                                 |        |

#### Semester-VIII

| S. No.               | Course Code             | Course Name   | Category          | L-T-P-C                    | Course Code (prior to Jul 2022) | Senate  |
|----------------------|-------------------------|---|-------------------|----------------------------|---------------------------------|---------|
| 1.                   | ME403M                  | Mechatronics  | PMT               | 3-0-2-4                    | ME4202                          | 8       |
| 2.                   | ME404L                  | Industrial Automation   | PMT               | 3-0-0-3                    | ME4204                          | 8       |
| 3.                   | DPE3                    | Department Elective-3   | PMT               | 3-0-0-3                    |                                 |         |
| 4.                   | ME492G/<br>DPE4<br>DPE5 | Project Phase-II/<br>Department Elective-4<br>Department Elective-5 | PMP<br>PMT<br>PMT | ---6<br>3-0-0-3<br>3-0-0-3 | ME4250/<br>DPE4<br>DPE5         | 1<br>22 |
| 5.                   | HS401L                  | Professional Ethics   | HPE               | 2-0-0-2                    | HS4202                          | 7       |
| <b>Total Credits</b> |                         |   |                   | <b>18</b>                  |                                 |         |

#### **TOTAL CREDITS: 166**

*Senate in the last column of the table refers to the Senate in which contents of the course were approved.*