



**MIT ART, DESIGN AND TECHNOLOGY  
UNIVERSITY, PUNE**

**MIT SCHOOL OF ENGINEERING, PUNE**

**STRUCTURE and SYLLABUS**

**FOR**

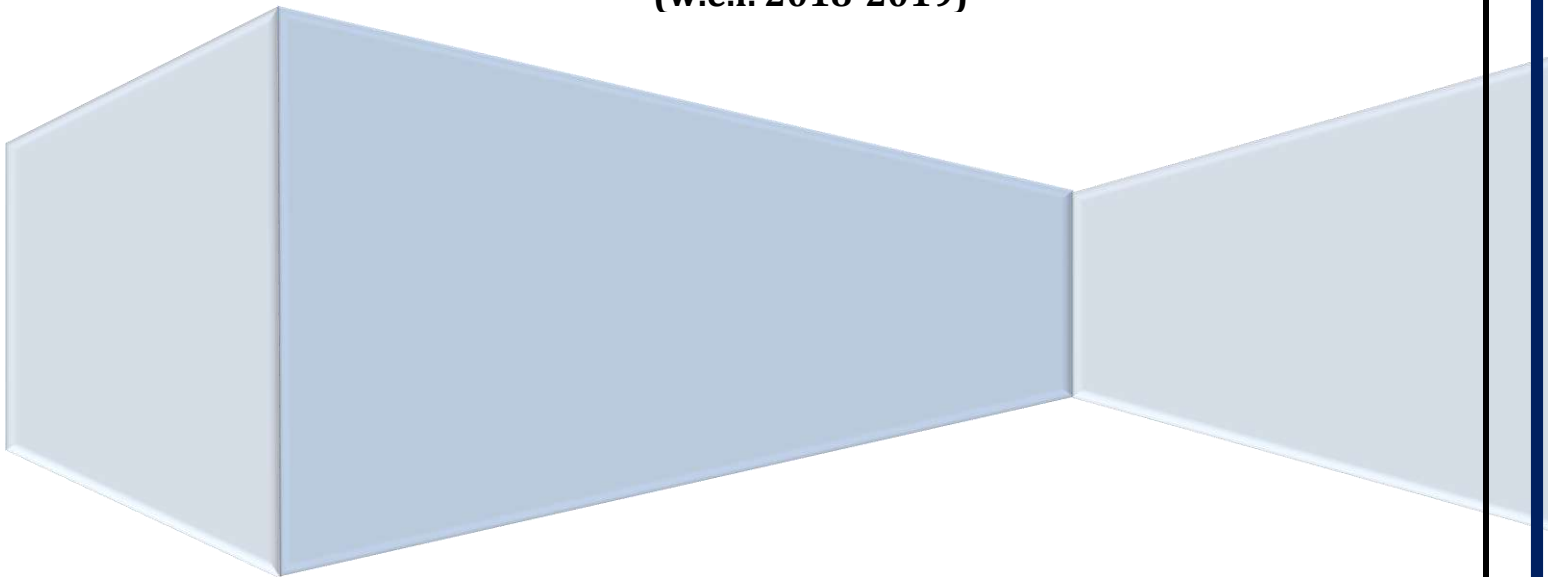
**B. Tech. Mechanical Engineering  
(Mechatronics & Automation)**

**2018-19 pattern**

**160 credits**

**UNDER FACULTY OF TECHNOLOGY**

**(w.e.f. 2018-2019)**



**B. Tech. (Mechanical Engineering)**  
**(2018 Regulations)**

**(Credits: 160)**

| Course Code  | Course Name  | Hours/week |          |           |           | Maximum Marks |            |            |
|--------------|--|------------|----------|-----------|-----------|---------------|------------|------------|
|              |  | Lecture    | Tutorial | Practical | Credits   | CA            | FE         | Total      |
| 18BTMT101    | Linear Algebra and Calculus                          | 3          | 1        | 0         | 4         | 40            | 60         | 100        |
| 18BTCH003    | Engineering Chemistry                                | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTCS006    | Programming for Problem Solving                      | 2          | 0        | 0         | 2         | 40            | 60         | 100        |
| 18BTEG104    | English Communication for engineers                  | 2          | 0        | 0         | 2         | 50            | 0          | 50         |
| 18BTCH013    | Chemistry Laboratory                                 | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTCS016    | Programming Lab                                      | 0          | 0        | 4         | 2         | 40            | 60         | 100        |
| 18BTEG114    | English communication Lab                            | 0          | 0        | 2         | 1         | 50            | 0          | 50         |
| 18BTME017    | Engineering Workshop                                 | 0          | 0        | 4         | 2         | 50            | 0          | 50         |
| <b>Total</b> |  | <b>10</b>  | <b>1</b> | <b>12</b> | <b>17</b> | <b>350</b>    | <b>300</b> | <b>650</b> |
| 18BTMT201    | Differential Equations and Advanced Calculus         | 3          | 1        | 0         | 4         | 40            | 60         | 100        |
| 18BTPY002    | Engineering Physics                                  | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTEC005    | Basics of Electrical and Electronics Engineering     | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTME011    | Engineering Graphics                                 | 1          | 0        | 4         | 3         | 50            | 50         | 100        |
| 18BTME202    | Basics of Mechanical Engineering                     | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTPY012    | Physics Laboratory                                   | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTEC015    | Basics of Electrical and Electronics Engineering Lab | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTME212    | Engineering Graphics Lab                             | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| <b>Total</b> |  | <b>13</b>  | <b>1</b> | <b>10</b> | <b>19</b> | <b>330</b>    | <b>470</b> | <b>800</b> |

The course Environmental Science is conducted during the Induction program of the First year

**MIT SCHOOL OF ENGINEERING, Department of Mechanical Engineering.**

| <b>SEMESTER III</b> |   |                   |                 |                  |                |                      |            |              |
|---------------------|---|-------------------|-----------------|------------------|----------------|----------------------|------------|--------------|
| <b>Course Code</b>  | <b>Course Name</b>                              | <b>Hours/week</b> |                 |                  |                | <b>Maximum Marks</b> |            |              |
|                     |   | <b>Lecture</b>    | <b>Tutorial</b> | <b>Practical</b> | <b>Credits</b> | <b>CA</b>            | <b>FE</b>  | <b>Total</b> |
| 18BTMA301           | Thermodynamics                                  | 3                 | 0               | 0                | 3              | 40                   | 60         | 100          |
| 18BTMA302           | Differential Equations and Transform Techniques | 3                 | 1               | 0                | 4              | 40                   | 60         | 100          |
| 18BTMA303           | Mechanics of Solid                              | 3                 | 1               | 0                | 4              | 40                   | 60         | 100          |
| 18BTMA304           | Manufacturing Processes                         | 3                 | 0               | 2                | 4              | 40                   | 60         | 100          |
| 18BTMA305           | Engineering Metallurgy                          | 3                 | 0               | 2                | 4              | 40                   | 60         | 100          |
| 18BTMA311           | Thermodynamics Lab                              | 0                 | 0               | 2                | 1              | 40                   | 60         | 100          |
| 18BTMA312           | Geometric Modeling Lab                          | 0                 | 0               | 2                | 1              | 25                   | 25         | 50           |
| 18BTMA321           | Mini Project-I                                  | 0                 | 0               | 4                | 2              | 100                  | --         | 100          |
| <b>Total</b>        |   | <b>15</b>         | <b>2</b>        | <b>12</b>        | <b>23</b>      | <b>365</b>           | <b>385</b> | <b>750</b>   |
| <b>SEMESTER IV</b>  |   |                   |                 |                  |                |                      |            |              |
| 18BTMA401           | Applied Thermodynamics                          | 3                 | 0               | 0                | 3              | 40                   | 60         | 100          |
| 18BTMA402           | Fluid Mechanics                                 | 3                 | 0               | 0                | 3              | 40                   | 60         | 100          |
| 18BTMA403           | Advanced Manufacturing Processes and Tooling    | 3                 | 1               | 0                | 4              | 40                   | 60         | 100          |
| 18BTMA404           | Theory of Machines-I                            | 3                 | 0               | 2                | 4              | 40                   | 60         | 100          |
| 18BTMA405           | Electrical Machines                             | 3                 | 1               | 0                | 4              | 40                   | 60         | 100          |
| 18BTMA411           | Applied Thermodynamics Lab                      | 0                 | 0               | 2                | 1              | 25                   | 50         | 75           |
| 18BTMA412           | Fluid Mechanics Lab                             | 0                 | 0               | 2                | 1              | 25                   | 50         | 75           |
| 18BTMA421           | Mini Project-II                                 | 0                 | 0               | 4                | 2              | 100                  | --         | 100          |
| <b>Total</b>        |   | <b>15</b>         | <b>2</b>        | <b>10</b>        | <b>22</b>      | <b>350</b>           | <b>400</b> | <b>750</b>   |

**SEMESTER-V**

| Course Code  | Course Name               | Hours/week |          |           |           | Maximum Marks |            |            |
|--------------|---------------------------|------------|----------|-----------|-----------|---------------|------------|------------|
|              |                           | Lecture    | Tutorial | Practical | Credits   | CA            | FE         | Total      |
| 18BTMA501    | Heat Transfer             | 3          | 0        | 2         | 4         | 40            | 60         | 100        |
| 18BTMA502    | Computational Science     | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA503    | Machine Design            | 3          | 0        | 2         | 4         | 40            | 60         | 100        |
| 18BTMA504    | Hydraulics and Pneumatics | 3          | 0        | 2         | 4         | 40            | 60         | 100        |
| 18BTMA505    | Mechatronics              | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA511    | Computational Science Lab | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA512    | Mechatronics Lab          | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA521    | Mini Project III          | 0          | 0        | 4         | 2         | 100           | --         | 100        |
| <b>Total</b> |                           | <b>15</b>  | <b>0</b> | <b>14</b> | <b>22</b> | <b>380</b>    | <b>420</b> | <b>800</b> |

**SEMESTER-VI**

| Course Code  | Course Name                                | Hours/week |          |           |           | Maximum Marks |            |            |
|--------------|--|------------|----------|-----------|-----------|---------------|------------|------------|
|              |  | Lecture    | Tutorial | Practical | Credits   | CA            | FE         | Total      |
| 18BTMA601    | Mechanical & Electronic Measurements       | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA602    | Microprocessors & Microcontrollers         | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA603    | Metrology and Quality Control              | 3          | 0        | 2         | 4         | 40            | 60         | 100        |
| 18BTMA604    | Heating Ventilation & Air conditioning     | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA63--   | Elective I                                 | 3          | 1        | 0         | 4         | 40            | 60         | 100        |
| 18BTMA611    | Microcontroller & Measurement Lab          | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA612    | Heating Ventilation & Air conditioning Lab | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA621    | Mini Project IV                            | 0          | 0        | 4         | 2         | 100           | --         | 100        |
| <b>Total</b> |  | <b>15</b>  | <b>1</b> | <b>10</b> | <b>21</b> | <b>380</b>    | <b>420</b> | <b>800</b> |

**SEMESTER VII**

| Course Code          | Course Name                                | Hours/week |          |           |           | Maximum Marks |            |            |
|----------------------|--|------------|----------|-----------|-----------|---------------|------------|------------|
|                      |  | Lecture    | Tutorial | Practical | Credits   | CA            | FE         | Total      |
| 18BTMA701            | Financial Management                       | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA702            | Robotics and Automation                    | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA703            | Industrial Instrumentation and Control     | 3          | 0        | 2         | 4         | 40            | 60         | 100        |
| 18BTMA73_            | Elective-II                                | 3          | 1        | 0         | 4         | 40            | 60         | 100        |
| 18BTMA73_            | Elective-III                               | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA711            | Industrial Instrumentation and Control Lab | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA712            | Robotics and Automation Lab                | 0          | 0        | 2         | 1         | 40            | 60         | 100        |
| 18BTMA721            | Project Phase-I                            | 0          | 0        | 4         | 2         | 100           | --         | 100        |
| <b>Total</b>         |  | <b>15</b>  | <b>1</b> | <b>10</b> | <b>21</b> | <b>380</b>    | <b>420</b> | <b>800</b> |
| <b>SEMESTER VIII</b> |  |            |          |           |           |               |            |            |
| 18BTMA8__            | Open Elective                              | 3          | 0        | 0         | 3         | 40            | 60         | 100        |
| 18BTMA821            | Project Phase-II                           | 0          | 0        | 24        | 12        | 200           | 200        | 400        |
| <b>Total</b>         |  | <b>3</b>   | <b>0</b> | <b>24</b> | <b>15</b> | <b>240</b>    | <b>260</b> | <b>500</b> |

## LIST OF ELECTIVES

| Elective      | Course Name |  |
|---------------|-------------|--|
| Elective-I    | 18BTMA631   | Machine Learning   |
|               | 18BTMA632   | Power Plant Instrumentation                                  |
|               | 18BTMA633   | Micro-Electro Mechanical Systems                             |
|               | 18BTMA634   | Power Electronics  |
| Elective-II   | 18BTMA731   | Artificial Intelligence                                      |
|               | 18BTMA732   | Building Automation  |
|               | 18BTMA733   | Agricultural and Food Processing Instrumentation             |
|               | 18BTMA734   | CAD/CAM  |
| Elective-III  | 18BTMA735   | Operations Research  |
|               | 18BTMA736   | Management Information System                                |
|               | 18BTMA737   | Fuzzy Logic and Neural Network                               |
|               | 18BTMA738   | Supply Chain Management                                      |
| Open Elective | 18BTMA831   | <b>Open Elective</b><br>Digital Manufacturing<br>Autotronics |