

**Shivaji University**  
**Vidya Nagar, Kolhapur, Maharashtra 416004**

**Department of Technology**



**As per NEP2020 guidelines**  
**First Year B.Tech (Mechanical Engineering)**  
**2023-24 onwards**

**F.Y to Final Year B.Tech (Mechanical Engineering) Curriculum structure w.e.f. 2023-24 and onwards.**

A. Definition of Credit:

|                              |             |
|------------------------------|-------------|
| 1 Hr. Lecture (L) per week   | 1 credit    |
| 1 Hr. Tutorial (T) per week  | 1 credit    |
| 1 Hr. Practical (P) per week | 0.5 credits |
| 2 Hr. Practical(Lab)/week    | 1 credit    |

B. Credits for award of Degrees –

- A total of credits **160** for a student are required to be eligible to get **Under Graduate degree in Engineering (Major)**.
- A student will be eligible to get Under Graduate degree with **additional Minor Engineering**, if he/she completes an **additional 16 credits**. These could be acquired by completing the respective courses from the pool launched by the respective Program. (The courses could be through MOOCs also)
- A student will be eligible to get Under Graduate degree with **Honours**, if he/she completes an **additional 12 credits**. These could be acquired preferably through MOOCs the title of which will be well declared to the aspirants who will chose the same from the pool of courses.
- A student will be eligible to get **Under Graduate degree with Honours and Research**, if he/she completes an **additional of 17 credits comprising of 5 credits assigned to additional research project**. (These 12 credits could be acquired preferably through MOOCs. As regards additional project work, it is mandatory to be successful in publishing at least two research papers based on the research topic.)

C. Structure of Undergraduate Engineering Program: -

| Sr. No. | Category Suggested                                                                                     | Course Code | Breakup of Credits (Total 160)<br>As per AICTE Model | Our status |
|---------|--------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------|------------|
| 1.      | Humanities and Social Sciences including Management & Environment Courses                              | HSMEC       | 12                                                   | 00         |
| 2.      | Basic Science courses                                                                                  | BSC         | 25                                                   | 20         |
| 3.      | Engineering Science Courses including workshop, drawing, basics of electrical/mechanical/computer etc. | ESC         | 24                                                   | 34         |
| 4.      | Professional Core Courses                                                                              | PCC         | 48                                                   | 65         |
| 5.      | Professional Elective Courses relevant to chosen specialization/branch                                 | PEC         | 18                                                   | 06         |
| 6.      | Open subjects – Electives from other technical and /or emerging subjects                               | OEC         | 18                                                   | 17         |
| 7.      | Project , Seminar and Internship                                                                       | PSI         | 15                                                   | 18         |

**F.Y to Final Year B.Tech (Mechanical Engineering) Curriculum structure w.e.f. 2023-24 and onwards.**

|     |                                                                                                                                            |     |            |                                         |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|-----------------------------------------|
| 8.  | Research Skills Courses                                                                                                                    | RSC | -          | 00                                      |
| 9.  | Project Based Learning                                                                                                                     | PBL | Non Credit | More than adequate courses covered here |
| 10. | Mandatory Audit Courses [Social, Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Traditional Knowledge] | MAC | Non Credit |                                         |
|     | Total                                                                                                                                      |     | 160        | 160                                     |

**D. Course code and Definitions: -**

| Course code  | Definitions                                                                 |
|--------------|-----------------------------------------------------------------------------|
| L            | Lecture                                                                     |
| T            | Tutorial                                                                    |
| P            | Practical                                                                   |
| ISE          | In Semester Examination                                                     |
| ESE          | End Semester Examination                                                    |
| IE           | Internal Evaluation                                                         |
| EE           | External Evaluation                                                         |
| BSC          | Basic Science Courses                                                       |
| ESC          | Engineering Science Courses                                                 |
| HSMEC        | Humanities and Social Sciences including Management , Environmental Courses |
| PCC          | Professional Core Courses                                                   |
| PEC          | Professional Elective Courses                                               |
| OEC          | Open Elective Courses                                                       |
| MAC          | Mandatory Audit Courses                                                     |
| PSI          | Project, Seminar, Internship                                                |
| PBL          | Project Based Learning                                                      |
| RSC          | Research Skills Courses                                                     |
| PBL, PBI     | Project Based Learning Program Based Internship                             |
| MN , HN, HNR | Minor , Honour, Honour with Research                                        |
| CC, DC       | Certificate Course, Diploma Course                                          |

**Mandatory Induction Program at FY B. Tech First Term Commencement**

**3 Weeks Duration**

- Physical activity
- Creative Arts
- Universal Human Values
- Literary
- Proficiency Modules
- Lectures by Eminent People
- Visits to local Areas
- Familiarization to Dept./Branch & Innovations



## Shivaji University, Kolhapur Department of Technology

### First Year B.Tech (Mechanical Engineering), Semester- I

#### Physics Group : Teaching & Evaluation Scheme

| S.N. | Category                                                      | Course Code | Course Title                                            | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|---------------------------------------------------------------|-------------|---------------------------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                                                               |             |                                                         | L              | T  | P  |               |                             | Theory            | Practical |
|      |                                                               |             |                                                         |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Basic Science Course                                          | BSC111      | Engineering Physics                                     | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 2.   | Basic Science course                                          | BSC112      | Engineering Mathematics –I                              | 03             | 01 | -  | 04            | 04                          | 30:70             | 50:00     |
| 3.   | Engineering Science Courses                                   | ESC111      | Elements of Mechanical and Electronics Engineering      | 04             | -  | 02 | 06            | 05                          | 30:70             | 100:00    |
| 4.   | Engineering Science Courses                                   | ESC112      | Engineering Mechanics                                   | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 5.   | Engineering Science Course                                    | ESC113      | Computer Programming for Engineers                      | 02             | -  | 02 | 03            | 03                          | 30:70             | 50:00     |
|      |                                                               |             |                                                         | -              | -  | -  | -             | 20                          | 500               | 300       |
| 6.   | Humanities & Social Sciences, Management, Environment Courses | HSMEC 111   | Professional Communication (English)-I                  | 02             | -  | -  | 02            | ISE at Course in charge end |                   |           |
| 7.   | Research Skills Courses                                       | RSC111      | *Design Thinking and Innovation-I and Social Internship | 01             | -  | 01 | 02            | ISE at Course in charge end |                   |           |
| 8.   | Mandatory Audit Course                                        | MAC111      | Yoga and Meditation                                     | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
|      |                                                               |             | <b>Total Hours</b>                                      | 19             | 01 | 09 | 29            | -                           | -                 | -         |

\*Design Thinking and Innovation-I and Social Internship: After the First Semester of F.Y. B. Tech, the students will undergo social rural internship of two weeks and the evaluation will be done in the Second Semester.



## Shivaji University, Kolhapur

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#### First Year B.Tech (Mechanical Engineering), Semester- I

#### Chemistry Group : Teaching & Evaluation Scheme

| S.N.               | Category                                                      | Course Code | Course Title                                            | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|--------------------|---------------------------------------------------------------|-------------|---------------------------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|                    |                                                               |             |                                                         | L              | T  | P  |               |                             | Theory            | Practical |
|                    |                                                               |             |                                                         |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.                 | Basic Science Course                                          | BSC111      | Engineering Chemistry                                   | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 2.                 | Basic Science Course                                          | BSC112      | Engineering Mathematics –I                              | 03             | 01 | -  | 04            | 04                          | 30:70             | 50:00     |
| 3.                 | Engineering Science Course                                    | ESC111      | Elements of Civil and Electrical Engineering            | 04             | -  | 02 | 06            | 05                          | 30:70             | 100:00    |
| 4.                 | Engineering Science Course                                    | ESC112      | Engineering Graphics and Design                         | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 5.                 | Engineering Science Course                                    | ESC113      | Electrical & Electronic Components and Devices          | 02             | -  | 02 | 04            | 03                          | 30:70             | 50:00     |
|                    |                                                               |             |                                                         | -              | -  | -  | -             | 20                          | 500               | 300       |
| 6.                 | Humanities & Social Sciences, Management, Environment Courses | HSMEC 111   | Professional Communication (English)-I                  | 02             | -  | -  | 02            | ISE at Course in charge end |                   |           |
| 7.                 | Research Skills Course                                        | RSC111      | *Design Thinking and Innovation-I and Social Internship | 01             | -  | 01 | 02            | ISE at Course in charge end |                   |           |
| 8.                 | Mandatory Audit Course                                        | MAC111      | Yoga and Meditation                                     | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
| <b>Total Hours</b> |                                                               |             |                                                         | 19             | 01 | 09 | 29            | -                           | -                 | -         |

\*Design Thinking and Innovation-I and Social Internship: After the First Semester of F.Y. B. Tech, the students will undergo social rural internship of two weeks and the evaluation will be done in the Second Semester.



## Shivaji University, Kolhapur

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#### First Year B.Tech (Mechanical Engineering), Semester- II

#### Physics Group, Teaching & Evaluation Scheme

| S. N. | Category                                                      | Code      | Course Title                                   | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|-------|---------------------------------------------------------------|-----------|------------------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|       |                                                               |           |                                                | L              | T  | P  |               |                             | Theory            | Practical |
|       |                                                               |           |                                                |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.    | Basic Science Course                                          | BSC121    | Engineering Chemistry                          | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 2.    | Basic Science Course                                          | BSC122    | Engineering Mathematics – II                   | 03             | 01 | -  | 04            | 04                          | 30:70             | 50:00     |
| 3.    | Engineering Science Course                                    | ESC121    | Elements of Civil and Electrical Engineering   | 04             | -  | 02 | 06            | 05                          | 30:70             | 100:00    |
| 4.    | Engineering Science Course                                    | ESC122    | Engineering Graphics and Design                | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 5.    | Engineering Science Course                                    | ESC123    | Electrical & Electronic Components and Devices | 02             | -  | 02 | 04            | 03                          | 30:70             | 50:00     |
|       |                                                               |           |                                                | -              | -  | -  | -             | 20                          | 500               | 300       |
| 6.    | Humanities & Social Sciences, Management, Environment Courses | HSMEC 121 | Professional Communication (English)-II        | 02             | -  | -  | 02            | ISE at Course in charge end |                   |           |
| 7.    | Research Skills Course                                        | RSC121    | Design Thinking & Innovation-II                | 01             | -  | 01 | 02            | ISE at Course in charge end |                   |           |
| 8.    | Mandatory Audit Course                                        | MAC121    | Human Rights and Constitution                  | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
|       |                                                               |           | <b>Total Hours</b>                             | 17             | 01 | 09 | 29            | -                           | -                 | -         |



## Shivaji University, Kolhapur

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#### First Year B.Tech (Mechanical Engineering), Semester- II

#### Chemistry Group : Teaching & Evaluation Scheme

| S.N. | Category                                                     | Code      | Course Title                                       | Hours per week |           |           | Contact Hours | Credits                     | Evaluation scheme |              |
|------|--------------------------------------------------------------|-----------|----------------------------------------------------|----------------|-----------|-----------|---------------|-----------------------------|-------------------|--------------|
|      |                                                              |           |                                                    | L              | T         | P         |               |                             | Theory            | Practical    |
|      |                                                              |           |                                                    |                |           |           |               |                             | <b>ISE:ESE</b>    | <b>IE:EE</b> |
| 1.   | Basic Science Course                                         | BSC121    | Engineering Physics                                | 03             | -         | 02        | 05            | 04                          | 30:70             | 50:00        |
| 2.   | Basic Science Course                                         | BSC122    | Engineering Mathematics – II                       | 03             | 01        | -         | 04            | 04                          | 30:70             | 50:00        |
| 3.   | Engineering Science Course                                   | ESC121    | Elements of Mechanical and Electronics Engineering | 04             | -         | 02        | 06            | 05                          | 30:70             | 100:00       |
| 4.   | Engineering Science Course                                   | ESC122    | Engineering Mechanics                              | 03             | -         | 02        | 05            | 04                          | 30:70             | 50:00        |
| 5.   | Engineering Science Course                                   | ESC123    | Computer Programming for Engineers                 | 02             | -         | 02        | 04            | 03                          | 30:70             | 50:00        |
|      |                                                              |           |                                                    | -              | -         | -         | -             | <b>20</b>                   | <b>500</b>        | <b>300</b>   |
| 6.   | Humanities & Social Sciences, Management, Environment Course | HSMEC 121 | Professional Communication (English)-II            | 02             | -         | -         | 02            | ISE at Course in charge end |                   |              |
| 7.   | Research Skills Course                                       | RSC121    | Design Thinking and Innovation-II                  | 01             | -         | 01        | 02            | ISE at Course in charge end |                   |              |
| 8.   | Mandatory Audit Course                                       | MAC121    | Human Rights and Constitution                      | 01             | -         | -         | 01            | ISE at Course in charge end |                   |              |
|      |                                                              |           | <b>Total Hours</b>                                 | <b>19</b>      | <b>01</b> | <b>09</b> | <b>29</b>     | -                           | -                 | -            |



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#### Second Year B.Tech (Mechanical Engineering), Semester- III

#### Teaching & Evaluation Scheme

| S.N. | Category                                             | Code      | Course Title                      | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|------------------------------------------------------|-----------|-----------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                                                      |           |                                   | L              | T  | P  |               |                             | Theory            | Practical |
|      |                                                      |           |                                   |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Basic Science Course                                 | BSC211    | Mathematics for Engineers –III    | 03             | -  | -  | 03            | 03                          | 30:70             | 00:00     |
| 2.   | Professional Core Courses                            | PCC211    | Metal Cutting and Machine Tools   | 03             | -  | -  | 03            | 03                          | 30:70             | 50:00     |
| 3.   | Professional Core Courses                            | PCC212    | Fluid Mechanics                   | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 4.   | Professional Core Courses                            | PCC213    | Material Science and Engineering  | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 5.   | Professional Core Courses                            | PCC214    | Engineering Thermodynamics        | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:50     |
| 6.   | Professional Core Courses                            | PCC215    | Machine Drawing                   | 01             | -  | 02 | 03            | 02                          | 00:00             | 00:50     |
|      |                                                      |           |                                   | -              | -  | -  | -             | 20                          | 500               | 300       |
| 7.   | Mandatory Audit Course                               | MAC211    | Soft Skills Development           | 02             | -  | -  | 02            | ISE at Course in charge end |                   |           |
| 8.   | Project Based Learning                               | PBL211    | Mini Project I & Industrial Visit | -              | 01 | -  | 01            | ISE at Course in charge end |                   |           |
| 9.   | Humanities, Social Sciences, Management, Environment | HSMEC 211 | Environmental Studies             | 02             | -  | -  | 02            | University Exam at year end |                   |           |
|      |                                                      |           | <b>Total Hours</b>                | 19             | 01 | 08 | 28            | -                           | -                 | -         |





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### Second Year B.Tech (Mechanical Engineering), Semester- IV

#### Teaching & Evaluation Scheme

| S.N. | Category                                            | Code      | Course Title                       | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|-----------------------------------------------------|-----------|------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                                                     |           |                                    | L              | T  | P  |               |                             | Theory            | Practical |
|      |                                                     |           |                                    |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Professional Core Course                            | PCC 221   | Fluid and Turbo Machinery          | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:50     |
| 2.   | Professional Core Course                            | PCC 222   | Strength of Materials              | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 3.   | Professional Core Course                            | PCC 223   | Manufacturing Processes            | 03             | -  | 02 | 05            | 04                          | 30:70             | 50:00     |
| 4.   | Professional Core Course                            | PCC 223   | Kinematics of Machines             | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 5.   | Professional Core Course                            | PCC 224   | Machine Design I                   | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
|      |                                                     |           |                                    | -              | -  | -  | -             | 20                          | 500               | 300       |
| 6.   | Mandatory Audit Course                              | MAC221    | Introduction to Performing Arts    | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
| 7.   | Mandatory Audit Course                              | MAC 222   | Aptitude Enhancement Course I      | -              | 01 | -  | 01            | ISE at Course in charge end |                   |           |
| 8.   | Project Based Learning                              | PBL221    | Mini Project II & Industrial Visit | -              | 01 | -  | 01            | ISE at Course in charge end |                   |           |
| 9.   | Humanities, Social Sciences, Management Environment | HSMEC 221 | Environmental Studies              | 02             | -  | -  | 02            | University Exam at year end |                   |           |
|      |                                                     |           | <b>Total Hours</b>                 | 18             | 02 | 08 | 30            | -                           | -                 | -         |



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#### Third Year B.Tech (Mechanical Engineering), Semester- V

#### Teaching & Evaluation Scheme

| S.N. | Category                    | Code   | Course Title                          | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|-----------------------------|--------|---------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                             |        |                                       | L              | T  | P  |               |                             | Theory            | Practical |
|      |                             |        |                                       |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Professional Core Course    | PCC311 | Heat and Mass Transfer                | 04             | -  | 02 | 06            | 05                          | 30:70             | 00:50     |
| 2.   | Professional Core Course    | PCC312 | Industrial Engineering and Management | 03             | -  | -  | 03            | 03                          | 30:70             | 50:00     |
| 3.   | Professional Core Course    | PCC313 | Machine Design II                     | 04             | -  | 02 | 06            | 05                          | 30:70             | 00:50     |
| 4.   | Professional Core Course    | PCC314 | Dynamics of Machines                  | 03             | -  | -  | 03            | 03                          | 30:70             | 00:50     |
| 5.   | Engineering Science Courses | ESC311 | CAD/CAM/CAE                           | 00             | -  | 02 | 02            | 01                          | 00:00             | 00:50     |
| 6.   | Professional Core Course    | PCC315 | Elective I                            | 03             | -  | -  | 03            | 03                          | 30:70             | 50:00     |
|      |                             |        |                                       | -              | -  | -  | -             | 20                          | 500               | 300       |
| 7.   | Mandatory Audit Course      | MAC311 | Introduction to Foreign Language      | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
| 8.   | Mandatory Audit Course      | MAC312 | Aptitude Enhancement Course II        |                | 01 | -  | 01            | ISE at Course in charge end |                   |           |
| 9.   | Project Based Learning      | PBL311 | Mini Project III & Industrial Visit   |                | -  | 02 | 02            | ISE at Course in charge end |                   |           |
|      |                             |        | <b>Total Hours</b>                    | 16             | 03 | 08 | 27            | -                           | -                 | -         |



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#### Third Year B.Tech (Mechanical Engineering), Semester- VI

#### Teaching & Evaluation Scheme

| S.N. | Category                     | Code   | Course Title                       | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|------------------------------|--------|------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                              |        |                                    | L              | T  | P  |               |                             | Theory            | Practical |
|      |                              |        |                                    |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Professional Core Course     | PCC321 | Control Engineering                | 03             | -  | -  | 03            | 03                          | 30:70             | 50:00     |
| 2.   | Professional Core Course     | PCC322 | Metrology and Quality Control      | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 3.   | Professional Core Course     | PCC323 | Internal Combustion Engines        | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 4.   | Professional Elective Course | PEC321 | Power Plant Engineering            | 03             | -  | -  | 03            | 03                          | 30:70             | 00:50     |
| 5.   | Open Elective Course         | OEC321 | Open Elective –I                   | 03             | -  | -  | 03            | 03                          | 30:70             | 00:00     |
| 6.   | Elective Course              | EEC321 | Elective –II                       | 03             | -  | -  | 03            | 03                          | 30:70             | 00:00     |
|      |                              |        |                                    | -              | -  | -  | -             | 20                          | 600               | 200       |
| 7.   | Mandatory Audit Course       | MAC321 | Design Thinking & Innovation - III | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
| 8.   | Mandatory Audit Course       | MAC322 | Aptitude Enhancement Course III    | -              | 01 | -  | 01            | ISE at Course in charge end |                   |           |
| 9.   | Project Based Learning       | PBL321 | Mini Project IV & Industrial Visit | -              | -  | 02 | 02            | ISE at Course in charge end |                   |           |
|      |                              |        | <b>Total Hours</b>                 | 16             | 03 | 06 | 26            | -                           | -                 | -         |



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#### Final Year B. Tech (Mechanical Engineering), Semester- VII

#### Teaching & Evaluation Scheme

| S.N. | Category                      | Code    | Course Title                       | Hours per week |    |    | Contact Hours | Credits                     | Evaluation scheme |           |
|------|-------------------------------|---------|------------------------------------|----------------|----|----|---------------|-----------------------------|-------------------|-----------|
|      |                               |         |                                    | L              | T  | P  |               |                             | Theory            | Practical |
|      |                               |         |                                    |                |    |    |               |                             | ISE:ESE           | IE:EE     |
| 1.   | Program Core Course           | PCC411  | Refrigeration and Air Conditioning | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 2.   | Program Core Course           | PCC412  | Industrial Automation              | 03             | -  | 02 | 05            | 04                          | 30:70             | 00:50     |
| 3.   | Program Core Course           | PCC413  | Automobile Engineering             | 03             |    | 02 | 05            | 04                          | 30:70             | 50:00     |
| 4.   | Open Elective Course          | OEC 411 | Open Elective- II                  | 03             | -  | -  | 03            | 03                          | 30:70             | 00:00     |
| 5.   | Program Elective Course       | PEC 411 | Elective II                        | 03             | -  | -  | 03            | 03                          | 30:70             | 00:00     |
| 6.   | Employment Enhancement Course | EEC411  | Summer Internship III              | -              | -  | 02 | 02            | 01                          | 00:00             | 50:00     |
| 7.   | Project Seminar Internship    | PSI 411 | Minor Project Work                 | -              | -  | 02 | 02            | 01                          | 00:00             | 50:50     |
|      |                               |         |                                    |                |    |    | -             | 20                          | 500               | 300       |
| 8.   | Mandatory Audit Course        | MAC411  | Green Technology & Sustainability  | 01             | -  | -  | 01            | ISE at Course in charge end |                   |           |
| 9.   | Project Based Learning        | PBL411  | Minor Project Lab                  |                | 01 | 02 | 03            | ISE at Course in charge end |                   |           |
|      |                               |         | <b>Total Hours</b>                 | 16             | 01 | 12 | 29            | -                           | -                 | -         |



## Shivaji University, Kolhapur Department of Technology

### Final Year B.Tech (Mechanical Engineering), Semester- VIII

#### Teaching & Evaluation Scheme

| S.N. | Category                            | Code    | Course Title                                | Hours per week                                     |           |           | Contact Hours | Credits                     | Evaluation scheme |            |
|------|-------------------------------------|---------|---------------------------------------------|----------------------------------------------------|-----------|-----------|---------------|-----------------------------|-------------------|------------|
|      |                                     |         |                                             | L                                                  | T         | P         |               |                             | Theory            | Practical  |
|      |                                     |         |                                             |                                                    |           |           |               |                             | ISE:ESE           | IE:EE      |
| 1.   | Employment Enhancement Course       | EEC 421 | Major Project (Follow up by the Department) | The entire Semester is to be spent in the industry |           |           |               | 14                          | 00:00             | 200:200    |
| 2.   | Open Elective Course                | OEC 421 | Open Elective –III (Through MOOC*)          | 03                                                 | -         | -         | 03            | 03                          | 30:70             | 50:00      |
| 3.   | [SWAYAM (NPTEL) or any other MOOCs] | OEC 422 | Open Elective –IV (Through MOOC *)          | 03                                                 | -         | -         | 03            | 03                          | 30:70             | 50:00      |
| 4.   | Project Seminar Internship          | PSI 423 | Online Seminars                             | -                                                  | -         | -         | -             | -                           | 00:00             | 100:00     |
|      |                                     |         |                                             | -                                                  | -         | -         | -             | <b>20</b>                   | <b>200</b>        | <b>600</b> |
| 6.   | Mandatory Audit Course              | MAC421  | MOOC III (Professional Ethics)              | 02                                                 | -         | -         | 02            | ISE at Course in charge end |                   |            |
|      |                                     |         | <b>Total Hours (Other than Internship)</b>  | <b>08</b>                                          | <b>02</b> | <b>02</b> | <b>13</b>     | -                           | -                 | -          |

\*There is an option for End Semester Examination either on the respective MOOC platform or at the course teacher's end through the University System.



## Shivaji University, Kolhapur Department of Technology

### B.Tech (Mechanical Engineering), Minor Degree

#### Teaching & Evaluation Scheme

| S.N. | Category                                                                                       | Code   | Course Title                                            | Hours per week |    |    | Contact Hours | Credits | Evaluation scheme |           |
|------|------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------|----------------|----|----|---------------|---------|-------------------|-----------|
|      |                                                                                                |        |                                                         | L              | T  | P  |               |         | Theory            | Practical |
| 1.   | Preferably on SWAYAM (NPTEL) or any other MOOCs (Minor Program Core) Or In a Face-to-Face mode | MN-1   | MN-Minor I                                              | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 2.   |                                                                                                | MN-2   | MN-Minor II                                             | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 3.   |                                                                                                | MN-3   | MN-Minor III                                            | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 4.   |                                                                                                | MN-4   | MN-Minor IV                                             | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 5.   | Minor Program Based Internship                                                                 | MN-PBI | Industrial Internship (Minor Program Specific Industry) | One Month      |    |    |               | 04      | 00:00             | 50:50     |
|      |                                                                                                |        |                                                         |                |    |    | -             | 16      | 400               | 100       |
|      |                                                                                                |        | <b>Total Hours</b>                                      | 12             | 00 | 00 | 12            | -       | -                 | -         |

**Note:** The workload against the B.Tech Minors will be finalized at the Program Level considering the strength of students opting for the Minor.

Credits for B. Tech (Minor) will be over and above the credits 160 required for the B. Tech (Major)

A minimum of 10 students need to opt for the particular specialization. Specializations available are:

1. B. Tech (Thermal Engineering)
2. B. Tech (Design Engineering)
3. B. Tech (Manufacturing Engineering)
4. B. Tech (Mechatronics and Automation)
5. B. Tech (Energy Engineering)

Note1: The Program will have a pool of courses (Either Conventional or the MOOCs) from which the aspirants will choose these four courses and they may complete the same starting from Second Year till their departure from Final Year Mechanical Engineering UG)



## Shivaji University, Kolhapur Department of Technology

### B.Tech (Mechanical Engineering), Honours

#### Teaching & Evaluation Scheme

| S.N. | Category                                                                                                                     | Code  | Course Title       | Hours per week |    |    | Contact Hours | Credits | Evaluation scheme |           |
|------|------------------------------------------------------------------------------------------------------------------------------|-------|--------------------|----------------|----|----|---------------|---------|-------------------|-----------|
|      |                                                                                                                              |       |                    | L              | T  | P  |               |         | Theory            | Practical |
| 1.   | SWAYAM (NPTEL) or any other MOOCs (Program Core Courses)<br>Or<br>Self-study mode with University's Semester End Examination | HN- 1 | HN-Course I        | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 2.   |                                                                                                                              | HN- 2 | HN- Course II      | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 3.   |                                                                                                                              | HN- 3 | HN- Course III     | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
| 4.   |                                                                                                                              | HN- 4 | HN- Course IV      | 03             | -  | -  | 03            | 03      | 30:70             | 00:00     |
|      |                                                                                                                              |       |                    | -              | -  | -  | -             | 12      | 400               | 00        |
|      |                                                                                                                              |       | <b>Total Hours</b> | 12             | 00 | 00 | 12            | -       | -                 | -         |

**Note:** The workload against the B.Tech Honours will be finalized at the Program Level considering the strength of students opting for the Honours.

Note1: The Program will have a declaration of pool for these courses either through MOOCs' or from a conventional list for self-studies. From this pool, the aspirants will choose the courses.

Note2: These courses / MOOCs will be different than those to be opted in the VIII semester of B. Tech Major.

Note 3: B. Tech (Honours) will be eligible to join the Second Year of PG program in the same specialisation.

Note 4: Students may complete these courses/MOOCs when they enter in FY B. Tech and they may complete the same before their departure.



## Shivaji University, Kolhapur Department of Technology

### B.Tech (Mechanical Engineering), Honours with Research

#### Teaching & Evaluation Scheme

| S.N. | Category                                                                                                                                 | Code     | Course Title                 | Hours per week |   |    | Contact Hours | Credits | Evaluation scheme |           |
|------|------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------|----------------|---|----|---------------|---------|-------------------|-----------|
|      |                                                                                                                                          |          |                              | L              | T | P  |               |         | Theory            | Practical |
|      |                                                                                                                                          |          |                              |                |   |    |               |         | ISE:ESE           | IE:EE     |
| 1.   | SWAYAM (NPTEL)<br>or any other MOOCs<br>(Program Core Courses)<br>Or<br>Self-study mode with<br>University's Semester<br>End Examination | HNR- 1   | HNR -Course I                | 03             | - | -  | 03            | 03      | 30:70             | 00:00     |
| 2.   |                                                                                                                                          | HNR – 2  | HNR - Course II              | 03             | - | -  | 03            | 03      | 30:70             | 00:00     |
| 3.   |                                                                                                                                          | HNR – 3  | HNR - Course III             | 03             | - | -  | 03            | 03      | 30:70             | 00:00     |
| 4.   |                                                                                                                                          | HNR – 4  | HNR - Course IV              | 03             | - | -  | 03            | 03      | 30:70             | 00:00     |
| 6.   | Project Based Learning                                                                                                                   | HNR –PBL | *Additional Research Project | -              | - | 10 | 10            | 05      | 00:00             | 50:50     |
|      |                                                                                                                                          |          |                              | -              | - | -  | -             | 17      | 400               | 100       |
|      |                                                                                                                                          |          | <b>Total Hours</b>           | 12             | - | 10 | 22            | -       | -                 | -         |

**Note:** The workload against the B.Tech Honours with Research will be finalized at the Program Level considering the strength of students opting for the Honours with Research.

**\*Research Project to be treated successful upon publishing of minimum two research papers in reputed Research Journals.**

Note1: The Program will have declaration pool of these courses/MOOCs from which the aspirants will choose the courses/MOOCs.

Note2: These courses or MOOCs will be different than those to be opted in the VIII semester of B. Tech Major.

Note 3: A successful B. Tech (Honours with Research) will be eligible to get enrolled to PhD in same or allied field.

Note 4: Students may complete these courses/MOOCs when they enter in FY B.Tech and they may complete the same before their departure.





## Shivaji University, Kolhapur

### Department of Technology

#### B.Tech (Mechanical Engineering), Exit After First Year (Certificate Course in Mechanical Engineering)

#### Teaching & Evaluation Scheme

| S.N. | Category                                                                                                  | Code      | Course Title          | Hours per week |          |          | Contact Hours | Credits  | Evaluation scheme |           |
|------|-----------------------------------------------------------------------------------------------------------|-----------|-----------------------|----------------|----------|----------|---------------|----------|-------------------|-----------|
|      |                                                                                                           |           |                       | L              | T        | P        |               |          | Theory            | Practical |
| 1.   | SWAYAM (NPTEL) or any other MOOCs<br>Or any other course from in face to face mode (Program Core Courses) | CC-MOOC 1 | CC-MOOC I **          | 02             | -        | -        | 02            | 02       | 30:70             | 00:00     |
| 2.   |                                                                                                           | CC-MOOC 2 | CC-MOOC II**          | 02             | -        | -        | 02            | 02       | 30:70             | 00:00     |
| 3.   | Program Based Internship                                                                                  | CC-PBI    | Industrial Internship | One Month      |          |          |               | 06       | 00:00             | 50:50     |
|      |                                                                                                           |           |                       | -              | -        | -        | -             | 10*      | 200               | 100       |
|      |                                                                                                           |           | <b>Total Hours</b>    | <b>04</b>      | <b>-</b> | <b>-</b> | <b>04</b>     | <b>-</b> | <b>-</b>          | <b>-</b>  |

**Note: The Workload against the Certificate Course will be finalised at the Program Level considering the strength of the students seeking for the Certificate.**

**\*Obtaining these credits will be in addition to 40 regular credits at FY B. Tech**

**\*\*There is an option for End Semester Examination either on respective MOOC platform or at the course teacher's end through the University System.**

Note 1: The students aspiring to exit after first year will finalise the title of the course/MOOC from the list provided by the Program.

Note 2: Program Specific Industry Internship to be completed by such students before commencement of SY B. Tech.



## Shivaji University, Kolhapur Department of Technology

### B.Tech (Mechanical Engineering), Exit After Second Year (Diploma in Mechanical Engineering)

#### Teaching & Evaluation Scheme

| S.N. | Category                                                                                                     | Code      | Course Title                    | Hours per week |          |          | Contact Hours | Credits  | Evaluation scheme |           |
|------|--------------------------------------------------------------------------------------------------------------|-----------|---------------------------------|----------------|----------|----------|---------------|----------|-------------------|-----------|
|      |                                                                                                              |           |                                 | L              | T        | P        |               |          | Theory            | Practical |
|      |                                                                                                              |           |                                 |                |          |          |               |          | ISE:ESE           | IE:EE     |
| 1.   | SWAYAM (NPTEL) or any other MOOCs<br>Or any other course from in face to face mode<br>(Program Core Courses) | DC-MOOC 1 | DC-MOOC I **                    | 03             | -        | -        | 03            | 03       | 30:70             | 00:00     |
| 2.   |                                                                                                              | DC-MOOC 2 | DC-MOOC II**                    | 03             | -        | -        | 03            | 03       | 30:70             | 00:00     |
| 3.   |                                                                                                              | DC-MOOC 3 | DC-MOOC III**                   | 03             | -        | -        | 03            | 03       | 30:70             | 00:00     |
| 4.   | Program Based Internship                                                                                     | DC-PBI    | One-Month Industrial Internship | -              | -        | -        | -             | 06       | 00:00             | 50:50     |
|      |                                                                                                              |           |                                 | -              | -        | -        | -             | 15*      | 300               | 100       |
|      |                                                                                                              |           | <b>Total Hours</b>              | <b>09</b>      | <b>-</b> | <b>-</b> | <b>09</b>     | <b>-</b> | <b>-</b>          | <b>-</b>  |

**Note: The Workload against the Diploma Course will be finalised at the Program Level considering the strength of the students seeking for the Diploma.**

**\*Obtaining these credits will be in addition to 80 regular credits up to SY B. Tech**

**\*\*** There is an option for End Semester Examination either on respective MOOC platform or at the course teacher's end through the University System.

Note 1: The students aspiring to exit after the second year will finalise the title of the course/MOOC from the list provided by the Program.

Note 2: Program Specific Industry Internship to be completed by such students before commencement of TY B. Tech.

**Salient Feature of the revision which has been made in line with NEP 2020 Guidelines:**

- I. **B. Tech Major:** With completion of the routine no of credits e.g.160 along with those mandatory audit courses in each semester. (Total 8 Semester @ 20 Credits=160 credits.  
**If the graduates want to pursue PG, it will be of 2 years duration for them.**
- II. **B. Tech Minors:** There will be at least one option from each Program floated for the minor degree): Additional 16 Credits are mandatory to be completed. (With award of an Additional Degree of the respective Specialization): **A minimum of 10 students to opt for the Minor Degree.**  
**The interested students have to pay separate fees for the same.**  
(Total 16 Credits= 03 Credits x 4 course=12 + 04 Credits against an in plant training of 30 days from the respective sector  
e. g If its B. Tech Food Technology, the mandatory training would be from Food Sector.)
- III. **B. Tech (Honours):** There will be additional 12 Credits obtained through successful completion of 04 MOOCs 3 Credits each. (Other than Compulsory MOOCs of Semester VIII). The MOOCs to be completed throughout four years starting from second year.  
**The interested students have to pay separate fees for the same. Such a candidate will be eligible to enter at the Second Year of PG in the respective specialisation as per NEP 2020 guidelines.**
- IV. **B. Tech (Honours with Research):** There will be additional 17 Credits obtained through successful completion out of which 12 credits will be from 04 MOOCs 3 Credits each. (Other than Compulsory MOOCs of Semester VIII). The balance 5 credits will be against an additional Project Work with success in publishing at least two research papers based on the research topic.  
**The interested students have to pay separate fees for the same. Such a candidate will be eligible as per NEP 2020 guidelines for pursuing PhD studies.**
- V. **Multiple entry and multiple exit feature:**
  1. **After First year,** anyone desiring exit from first year with a claim to be an awardee of certificate course in respective specialisation, the enrollee has to complete (in addition to the First Year Credits 40 in number), two, '2 credits theory courses' and a skill based 6 credits course (1 Month Rigorous industrial training). These additional 10 credits to be completed by such aspirants. The details of these courses to be defined by the respective specialisation and designed and well narrated to the aspirants.  
**The interested students have to pay separate fees for the same.**
  2. **After Second Year,** anyone desiring to exit from second year with a claim to be an awardee of Diploma in respective specialisation, the enrollee has to complete (in addition to the First Year and Second Year Credits 80 in number), three, '3 credits theory courses' and a skill based 6 credits course (1 Month Rigorous industrial training). These additional 15 credits to be completed by such aspirants. The details

of these courses to be defined by the respective specialisation and designed and well narrated to the aspirants.

**The interested students have to pay separate fees for the same.**

**Note:** As regards, multiple entries, any student from same specialisation who desires to join at second, third or Final Year has to have accumulation of those minimum numbers credits up to the last year of his entry year in his account.

## **Pool of Courses under various features**

As per this revision of B. Tech curriculum in line with NEP2020, here is an exhaustive pool of courses for opting by different aspirants under different features namely: 1-year certificate, diploma in respective Major Program, B. Tech Minor, Elective I and Elective II under B. Tech Major and B. Tech Honours.

### **I. Pool of Courses against Multiple entry-multiple exits (Certificate & Diploma)**

- i. Fundamentals of chemical engineering (Compulsory for 1-year Certificate)
- ii. Introduction to DCS (For 1 Year Certificate)
- iii. Analytical methods and instrumentation (For Diploma)
- iv. Introduction to SOFTWARE TOOLS in Mechanical Industry (For Diploma)
- v. Basics of Mass and Energy Balance (For Diploma)

However, for aspirants interested to leave after Second Year B.Tech with a claim for Diploma in Mechanical Engineering, the candidate has to have completion of the courses against 1-year certification also

### **II. Pool of Courses against Minors**

Credits for B. Tech (Minor) will be over and above the credits 160 required for the B. Tech (Major)  
A minimum of 10 students need to opt for the particular specialization. Specializations available are:

1. B. Tech (Thermal Engineering)
2. B. Tech (Design Engineering)
3. B, Tech (Manufacturing Engineering)
4. B. Tech (Mechatronics and Automation)
5. B, Tech (Energy Engineering)

Note1: The Program will have a pool of courses (Either Conventional or the MOOCs) from which the aspirants will choose these four courses and they may complete the same starting from Second Year till their departure from Final Year Mechanical Engineering UG)

### **III. Pool of Courses against Honours, Open Elective I to IV (From Semester VI onwards of Major Degree).**

**In the case of Open Electives I and II, students will have the option to choose any course from the list of open elective pools from across the institute (Department of Technology) while Open Electives III and IV would be said as self-study courses via MOOCs/ Online. However, in this case, the end semester examination may either be by the respective institute offering the MOOCs or it could be through the course in charge as per the University System.**

## Equivalence for the curriculum revision at B.Tech Chemical Engineering

We at the B.Tech Mechanical Engineering, Department of Technology due for revision in curriculum w.e.f. 2023-2024 have revised the structure and the content as well at the F.Y.B.Tech Mechanical Engineering. The entire structure for Second Year Final Year B. Tech Mechanical Engineering is also designed under this revision. The detailed of course content will be designed and submitted as the First Year batch proceed year to year.

A special mention rather feature of this revision is, ***it is in line with New National Education Policy 2020 guidelines.*** It is our every effort to incorporate most of the key features of NEP2020.

Following is a semester wise table that depicts equivalences for the previous version of curriculum with the new one.

### SEM – I

| Sr. No. | First Year B. Tech Semester I<br>Pre-revised syllabus | First Year B. Tech Semester I<br>Revised syllabus                     | Remark                                                         |
|---------|-------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------|
| 1       | Engineering Mathematics–I                             | Engineering Mathematics–I                                             | Content is revised                                             |
| 2       | Engineering Physics (Theory & Lab)                    | Engineering Physics (Theory & Lab)                                    | Content is revised                                             |
| 3       | Basics of Mechanical Engineering (Theory & Lab)       | Elements of Mechanical and Electronics Engineering (Theory & Lab)     | Contents are revised and two courses are clubbed.              |
| 4       | Engineering Mechanics (Theory & Lab)                  | Engineering Mechanics (Theory & Lab)                                  | Content is revised                                             |
| 5       | Basic Electronics Engineering (Theory & Lab)          | -----                                                                 | Clubbed with other course.                                     |
| 6       | Computer Programming (Lab)                            | Computer Programming for Engineers (Theory & Lab)                     | Content is revised                                             |
| 7       | Workshop Practice (Lab)                               | -----                                                                 | A new course called design thinking is introduced in lieu.     |
| 8       | -----                                                 | Professional Communication (English)-I (Theory)                       | Content is revised, split in I & II, It is as an audit course. |
| 9       | -----                                                 | Design Thinking and Innovation-I and Social Internship (Theory & Lab) | Newly introduced audit course.                                 |
| 10      | -----                                                 | Yoga and Meditation                                                   | Newly introduced audit course.                                 |

SEM – II

| Sr. No. | First Year B. Tech Semester II<br>Pre-revised syllabus | First Year B. Tech Semester II<br>Revised syllabus            | Remark                                                          |
|---------|--------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
| 1       | Engineering Mathematics–II                             | Engineering Mathematics–II                                    | Content is revised.                                             |
| 2       | Engineering Chemistry (Theory & Lab)                   | Engineering Chemistry (Theory & Lab)                          | Content is revised.                                             |
| 3       | Engineering Graphics (Theory & Lab)                    | Engineering Graphics AND Design (Theory & Lab)                | Title change with content revision.                             |
| 4       | Basic Civil Engineering (Theory & Lab)                 | Elements of Civil and Electrical Engineering (Theory & Lab)   | Two courses are clubbed with content revision                   |
| 5       | Basic Electrical Engineering (Theory & Lab)            | Electrical & Electronic Components and Devices (Theory & Lab) | Two courses are clubbed with content revision                   |
| 6       | Programming with Scilab and Matlab (Lab)               | -----                                                         | Title is changed                                                |
| 7       | Professional Communication (Lab)                       | Professional Communication (English)-II (Theory)              | Content is revised, split in I & II , It is as an audit course. |
| 8       | -----                                                  | Design Thinking and Innovation-II (Theory & Lab)              | Newly introduced audit course.                                  |
| 9       | -----                                                  | Human Rights and Constitution                                 | Newly introduced audit course.                                  |

**SEM – III**

| <b>Sr. No.</b> | <b>Second Year B. Tech Semester III Pre-revised syllabus</b> | <b>Second Year B. Tech Semester III Revised syllabus</b> | <b>Remark</b>                                           |
|----------------|--------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|
| 1.             | Programmable Computational Methods                           | Mathematics for Engineers –III                           | Content is revised, title is changed.                   |
| 2.             | Machine Tools and Processes                                  | Metal Cutting and Machine Tools                          | Clubbed in a single course with content revision.       |
| 3.             | Fluid Mechanics                                              | Fluid Mechanics                                          | Content is revised.                                     |
| 4.             | -                                                            | Material Science and Engineering                         | Shifted from next semester.                             |
| 5.             | Engineering Thermodynamics                                   | Engineering Thermodynamics                               | Shifted from next Semester.                             |
| 6.             | Machine Drawing                                              | Machine Drawing                                          | Content revision                                        |
| 7.             | Electrical Technology and Computer Programming C ++          |                                                          | Removed                                                 |
| 8.             | Environmental Studies                                        | Environmental Studies                                    | No change as it is centrally offered by the University. |
| 9.             | Soft Skills Development                                      | Soft Skills Development                                  | Content is revised                                      |
| 10.            | -----                                                        | Mini Project I & Industrial Visit                        | Newly introduced audit course.                          |



**SEM – IV**

| <b>Sr. No.</b> | <b>Second Year B. Tech Semester IV Pre-revised syllabus</b> | <b>Second Year B. Tech Semester IV Revised syllabus</b> | <b>Remark</b>                      |
|----------------|-------------------------------------------------------------|---------------------------------------------------------|------------------------------------|
| 1.             | Fluid and Turbo Machinery                                   | Fluid and Turbo Machinery                               | Content revision.                  |
| 2.             | Strength of Materials                                       | Strength of Materials                                   | Content revision.                  |
| 3.             | Metallurgy                                                  | Manufacturing Processes                                 | Title change with content revision |
| 4.             | Theory of Machines I                                        | Kinematics of Machines                                  | Title change with content revision |
| 5.             | -                                                           | Machine Design I                                        | Shifted to next semester.          |
| 6.             | Applied Mathematics                                         |                                                         | Removed                            |
| 7.             | Mini Project                                                | Mini Project II & Industrial Visit                      | Newly added audit course.          |
| 8.             | -                                                           | Inorganic Chemical Technologies                         | Shift of semester.                 |
| 9.             | -                                                           | Chemical Process Calculations                           | Shifted to previous semester.      |
| 10.            | -                                                           | Aptitude Enhancement Course I                           | Newly introduced.                  |
| 11.            | -                                                           | Environmental Studies                                   | No change.                         |

**SEM – V**

| <b>Sr. No.</b> | <b>Third Year B. Tech Semester V Pre-revised syllabus</b> | <b>Third Year B. Tech Semester V Revised syllabus</b> | <b>Remark</b>                                                                                              |
|----------------|-----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1.             | Machine Design I                                          | Machine Design II                                     | Machine Design I shifted to IV semester. Machine Design II shifted from Semester VI with Content revision. |
| 2.             | Theory of Machines II                                     | Dynamics of Machines                                  | Title change with content revision                                                                         |
| 3.             | Energy Engineering                                        |                                                       | Shift to Electives                                                                                         |
| 4.             | Tool Engineering                                          | Industrial Engineering and Management                 | Title change with content revision                                                                         |
| 5.             | Heat and Mass Transfer                                    | Heat and Mass Transfer                                | Content revision.                                                                                          |
| 6.             |                                                           | Elective I                                            | Newly introduced.                                                                                          |
| 7.             | Laboratory Computer Aided Drafting                        | CAD/CAM/CAE                                           | Title change with content revision                                                                         |
| 8.             | Internship I                                              | -                                                     | Newly introduced.                                                                                          |
| 9.             | Introduction to Foreign Language                          | Introduction to Foreign Language                      | Content revision.                                                                                          |
| 10.            | -                                                         | Aptitude Enhancement Course II                        | Newly introduced.                                                                                          |
| 11.            | -                                                         | Mini Project III & Industrial Visit (Lab)             | Newly introduced.                                                                                          |

**SEM – VI**

| Sr. No. | Third Year B. Tech Semester VI<br>Pre-revised syllabus | Third Year B. Tech Semester VI<br>Revised syllabus       | Remark                                             |
|---------|--------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|
| 1.      | Control Engineering                                    | Control Engineering                                      | Content revision                                   |
| 2.      | Metrology and Quality Control                          | Metrology and Quality Control                            | Content revision                                   |
| 3.      | Internal Combustion Engines                            | Internal Combustion Engines                              | Content revision                                   |
| 4.      |                                                        | Power Plant Engineering                                  | Shifted from VIII <sup>th</sup> Semester           |
| 5.      |                                                        | Open Elective –I                                         | Newly added.                                       |
| 6.      |                                                        | Elective –II                                             | Newly added.                                       |
| 7.      | Machine Design II                                      | -                                                        | Shifted to previous semester                       |
| 8.      | Engineering Economics                                  | -                                                        | Clubbed with Industrial Engineering and Management |
| 9.      | -                                                      | Industrial Safety, Health & Hazard Management (Tutorial) | Newly introduced.                                  |
| 10.     | -                                                      | Design Thinking & Innovation – III (Theory)              | Newly introduced.                                  |
| 11.     | -                                                      | Aptitude Enhancement Course III                          | Newly introduced.                                  |

**SEM – VII**

| <b>Sr. No.</b> | <b>Final Year B. Tech Semester VII Pre-revised syllabus</b> | <b>Final Year B. Tech Semester VII Revised syllabus</b> | <b>Remark</b>                                      |
|----------------|-------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------|
| 1.             | Refrigeration and Air Conditioning                          | Refrigeration and Air Conditioning                      | Content revision                                   |
| 2.             |                                                             | Industrial Automation                                   | Newly introduced.                                  |
| 3.             |                                                             | Automobile Engineering                                  | Shifted from last semester.                        |
| 4.             |                                                             | Open Elective- II                                       | Newly introduced.                                  |
| 5.             |                                                             | Elective II                                             | Shifted from last semester.                        |
| 6.             | Internship II                                               | Summer Internship III                                   | Title change with content revision                 |
| 7.             | -                                                           | Minor Project Work                                      | Shifted to previous semester.                      |
| 8.             | Mechanical System Design                                    | -                                                       | Well taken care in Open Elective Pool.             |
| 9.             | Hydraulics and Pneumatics                                   | -                                                       | Well taken care in Open Elective Pool.             |
| 10.            | Industrial Engineering                                      | -                                                       | Clubbed with Industrial Engineering and Management |
| 11.            | Elective I                                                  | -                                                       | Shifted to previous semester.                      |
| 12.            | Major Project-Phase I                                       | -                                                       | Shifted to last semester.                          |
| 13.            | Audit Course V<br>Introduction to Indian Constitution       | Green Technology & Sustainability                       | Newly added audit course.                          |
| 14.            | -----                                                       | Major Project Lab                                       | Content revision.                                  |

**SEM – VIII**

| <b>Sr. No.</b> | <b>Final Year B. Tech Semester VIII Pre-revised syllabus</b> | <b>Final Year B. Tech Semester VIII Revised syllabus</b> | <b>Remark</b>                                      |
|----------------|--------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|
| 1.             | Major Project-Phase II                                       | Major Project (Follow up by the Department)              | Title change with content revision                 |
| 2.             |                                                              | Open Elective –III (Through MOOC*)                       | Newly introduced.                                  |
| 3.             |                                                              | Open Elective –IV (Through MOOC *)                       | Newly introduced.                                  |
| 4.             |                                                              | Online Seminars                                          | Newly introduced.                                  |
| 5.             | Elective – II                                                | -                                                        | Shifted to previous semester                       |
| 6.             | Industrial Visits                                            | -                                                        | Clubbed with Mini Projects.                        |
| 7.             | Production and Operations Management                         | -                                                        | Clubbed with Industrial Engineering and Management |
| 8.             | Mechatronics                                                 | -                                                        | Shifted to previous semester with name change.     |
| 9.             | Costing and Cost Control                                     | -                                                        | Clubbed with Industrial Engineering and Management |
| 10.            | Automobile Engineering                                       | -                                                        | Shifted to previous semester                       |
| 11.            | Audit Course VI Professional Ethics                          | MOOC III (Professional Ethics)                           | Mode is changed.                                   |
| 12.            | -                                                            | Industrial Internship (Follow up by the Department)      | Newly introduced.                                  |
| 13.            | -                                                            | Open Elective –IV Preferably on MOOC *                   | Newly introduced. Online mode.                     |