**B.Tech(Four Years)**

**Course Structure**

**Department of Mechanical Engineering**

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**REVISION NO: 2022/1**

**RECOMMENDED BY DFC ON 10 MAY 2022 and CONFIRMED ON 14 JUNE 2022**

**RECOMMENDED BY DUGC 07 JULY 2022**

**PLACED IN THE BOAC MEETING DATED: 17 AUG 2022**

# COURSE STRUCTURE

B. TECH. (MECHANICAL)

(REFER TO ANNEXURE 1 FOR COURSES OFFERED BY ME DEPT TO OTHERS)

**Summary of revisions proposed by DFC on 10th May 2022**

DFC recommended to offer Core Elective -I in the 7th Semester and HSS-III in the 8th Semester.  DFC also revised the list of subjects to be offered as Core Elective -I in the 7th Semester and Core Elective-II in the 8th Semester.

The above resolution was confirmed in the DFC Meeting held on 14 JUNE 2022

**Resolution of the DUGC Meeting held on 07 JULY 2022**

It has been resolved that HU4201: FINANCE, ECONOMICS AND MANAGEMENT FOR ENGINEERS (3-0-0) will be the subject for 8th semester as proposed by the HSS department. The changed B.Tech course structure will be placed in our next BOAC meeting for approval.

**Resolution of the BoAC Meeting held on 17 AUG 2022**

**FIRST SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | Credit | Class load/  week | Marks |
| L | T | P |  |  |  |
| 1. | Mathematics-I | MA 1101 | 3 | 1 | 0 | 4 | 4 | 100 |
| 2. | Chemistry | CH 1101 | 3 | 0 | 0 | 3 | 3 | 100 |
| 3. | Introduction to Computing | CS 1101 | 3 | 0 | 0 | 3 | 3 | 100 |
| 4. | Mechanics | AM 1101 | 4 | 0 | 0 | 4 | 4 | 100 |
| 5. | Professional Communication in English | HU 1101 | 3 | 0 | 0 | 3 | 3 | 100 |
|  | Theory Sub-total |  | **16** | **1** | **0** | **17** | **17** | **500** |
| 6. | Chemistry Lab | CH 1171 | 0 | 0 | 3 | 2 | 3 | 50 |
| 7. | Computer Lab | CS 1171 | 0 | 0 | 3 | 2 | 3 | 50 |
| 8. | Drawing Practice | AM 1171 | 0 | 1 | 3 | 3 | 4 | 50 |
| 9. | NSS/NCC/PT/Yoga | SA 1171 |  |  |  | R\* |  |  |
|  | Practical Sub-total |  | **0** | **1** | **9** | **7** | **10** | **200** |
|  | **First Semester Total** |  |  |  |  | **24** | **27** | **700** |

\*R: Required (Non-credit but with grade)

**NB. No departmental subject in this Semester.**

**SECOND SEMESTER**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | | Credit | Class load/  week | Marks |
| L | T | P |  | |  |  |
| 1. | Mathematics – II | MA 1201 | 3 | 1 | 0 | 4 | | 4 | 100 |
| 2. | Physics | PH 1201 | 4 | 0 | 0 | 4 | | 4 | 100 |
| 3. | Basic Electrical Engineering | EE 1201 | 4 | 0 | 0 | 4 | | 4 | 100 |
| 4. | Environmentand Ecology | CE 1201 | 3 | 0 | 0 | 3 | | 3 | 100 |
| 5. | Sociology & Professional Ethics | HU 1201 | 3 | 0 | 0 | 3 | | 3 | 100 |
|  | **Theory Sub-total** |  | **17** | **1** | **0** | **18** | | **18** | **500** |
| 6. | Physics Lab | PH 1271 | 0 | 0 | 3 | 2 | | 3 | 50 |
| 7. | Basic Electrical Engineering Lab | EE 1271 | 0 | 0 | 3 | 2 | | 3 | 50 |
| 8. | Workshop Practice | WS 1271 | 0 | 0 | 3 | 2 | | 3 | 50 |
| 9. | NSS/NCC/PT/Yoga | SA 1271 |  |  |  | R\* | |  |  |
|  | **Practical Sub-total** |  | **0** | **0** | **9** | **6** | | **9** | **200** |
|  | **Second Semester Total** |  |  |  |  | **24** | | **27** | **700** |

\*R: Required (Non-credit but with grade)

**NB. No departmental subject in this Semester.**

**THIRD SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | MA 2101 | Mathematics – III | 3 | 0 | 0 | 3 | 3 | 100 |
|  | AM 2101 | Strength of Materials | ~~4~~ | 0 | 0 | 4 | 4 | 100 |
|  | AM 2102 | Dynamics | ~~4~~ | 0 | 0 | ~~4~~ | 4 | 100 |
|  | ME2101 | Basic Thermodynamics | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME2102 | Numerical Methods in Engineering | 3 | 0 | 0 | 3 | 3 | 100 |
|  |  | Theory Sub-total | **17** | **0** | **0** | **17** | **17** | **500** |
|  | AM 2171 | Strength of Materials Laboratory | 0 | 0 | 3 | 3 | 2 | 50 |
|  | AM 2172 | Machine Drawing | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME2171 | Numerical Methods in Engineering Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME2172 | Minor Project | 0 | 0 | 0 | 0 | 2 | 50 |
|  |  | Sessional Sub-total | **0** | **0** | **9** | **9** | **8** | **200** |
|  |  | 3rd Semester Total |  |  |  | **26** | **25** | **700** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**FOURTH SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | AM 2201 | Fluid Mechanics | 4 | 0 | 0 | 4 | 4 | 100 |
|  | ME2201 | Applied Thermodynamics | 3 | 1 | 0 | 4 | 4 | 100 |
|  | ME2202 | Kinematics of Mechanisms and Robots | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME2203 | Fundamentals of Machine Design | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME2204 | Engineering Materials and Processes | 3 | 1 | 0 | 4 | 4 | 100 |
|  |  | **Theory Sub-total** | **16** | **2** | **0** | **18** | **18** | **500** |
|  | AM 2271 | Fluid Mechanics Laboratory | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME2271 | Applied Thermodynamics Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME2272 | Machine Shop Practice | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME2273 | CAD Modelling and Simulation Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  |  | **Sessional Sub-total** | **0** | **0** | **12** | **12** | **8** | **200\*** |
|  |  | **4th Semester Total** |  |  |  | **30** | **26** | **700** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**FIFTH SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | ME3101 | Heat Transfer | 3 | 1 | 0 | 4 | 4 | 100 |
|  | ME3102 | Steam and Gas Power Systems | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME3103 | Dynamics of Machines and Vibration | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME3104 | Design of Power Transmission Elements | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME3105 | Machine Tools and Metal Cutting | 3 | 0 | 0 | 3 | 3 | 100 |
|  |  | **Theory Sub-total** | **15** | **1** | **0** | **16** | **16** | **500** |
|  | ME3171 | Heat Transfer Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME3172 | Design of Power Transmission Elements Sessional | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME3173 | Metal Cutting and Metrology Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  |  | **Sessional Sub-total** | **0** | **0** | **9** | **9** | **6** | **150** |
|  |  | **5th Semester Total** |  |  |  | **25** | **22** | **650** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**SIXTH SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | AM 3201 | Fluid Power Engineering | 4 | 0 | 0 | 4 | 4 | 100 |
|  | ME3201 | I.C. Engine and Jet Propulsion | 3 | 1 | 0 | 4 | 4 | 100 |
|  | ME3202 | Design of Frictional Machine Elements | 3 | 1 | 0 | 4 | 4 | 100 |
|  | ME3203 | Modelling and Control of Mechanical Systems | 3 | 0 | 0 | 3 | 3 | 100 |
|  | ME3204 | Manufacturing Technology | 3 | 0 | 0 | 3 | 3 | 100 |
|  |  | **Theory Sub-total** | 16 | 2 | **0** | **18** | **18** | **500** |
|  | AM 3271 | Fluid Power Engineering Laboratory | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME3271 | Engine Lab | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME3272 | Design of Frictional Machine Elements Sessional | 0 | 0 | 3 | 3 | 2 | 50 |
|  | ME3273 | Seminar and Group Discussion. | 0 | 0 | 3 | 3 | 2 | 50 |
|  |  | Sessional Sub-total | **0** | **0** | **12** | **12** | **8** | **200** |
|  |  | **6th Semester Total** |  |  |  | **30** | **26** | **700** |
|  |  |  |  |  |  |  |  |  |

**SEVENTH SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | ME4101 | Refrigeration and Air conditioning | 3 | 0 | 0 | 3 | 3 | **100** |
|  | ME4102 | Advanced Manufacturing Technology | 3 | 1 | 0 | 4 | 4 | **100** |
|  | ME4103 | Industrial Engineering and Operations Research | 3 | 0 | 0 | 3 | 3 | **100** |
|  |  | Core Elective -I  (**LIST-I)** | 3 | 0 | 0 | 3 | 3 | **100** |
|  |  | **Theory Sub-total** | **12** | **1** | **0** | **13** | **13** | **400** |
|  | ME4171 | Refrigeration and Air Conditioning Lab | 0 | 0 | 3 | 3 | 2 | **50** |
|  | ME4172 | Advanced Manufacturing Lab | 0 | 0 | 3 | 3 | 2 | **50** |
|  | ME4191 | B. Tech Project Part-I | 0 | 0 | 2 | 2 | 4 | **100** |
|  | ME4192 | Evaluation of 6th Semester Internship | 0 | 0 | 0 | 0 | 2 | **50** |
|  |  | Sessional Sub-total | **0** | **0** | **8** | **8** | **10** | **250** |
|  |  | **7th Semester Total** |  |  |  | **21** | **23** | **650** |
|  |  |  |  |  |  |  |  |  |

**LIST-I (Core Elective -I)**

1. Automobile Engineering (ME4121)

2.Fundamentals of Tribology(ME4122)

3. Fatigue and Fracture Mechanics (ME 4123)

4. Computational Fluid Dynamicsand Heat Transfer(ME4124)

5. Welding Technology (ME4125)

6. CNC Machining and Additive Manufacturing (ME4126)

**EIGHTH SEMESTER**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** |
| **L** | **T** | **P** |
|  | HU4201 | **HSS-III**  FINANCE, ECONOMICS AND MANAGEMENT FOR ENGINEERS | 3 | 0 | 0 | 3 | 3 | **100** |
|  | See the list below | Core Elective – II  (**LIST-II)** | 3 | 0 | 0 | 3 | 3 | **100** |
|  |  | Open –Elective | 3 | 0 | 0 | 3 | 3 | **100** |
|  |  | **Theory Sub-total** | **9** | **0** | **0** | **9** | **9** | **300** |
|  | ME4291 | B. Tech Project Part-II | 0 | 0 | 2 | 2 | 8 | **200** |
|  | ME4292 | Project Seminar | 0 | 0 | 0 | 0 | 2 | **50** |
|  | ME4293 | Comprehensive Viva | 0 | 0 | 0 | 0 | 2 | **100** |
|  |  | **Sessional Sub-total** | **0** | **0** | **2** | **2** | **12** | **350** |
|  |  | **8th Semester Total** |  |  |  | **11** | **21** | **650** |
|  |  | **TOTAL CREDIT (All Semester) =** | | | | | **191** |  |

**List of Core Elective -II subjects (to be offered in the 8th-semster)**

1. Power Plant Engineering(ME4221)

2. Manufacturing Automation(ME4222)

3. Finite Element Method for Engineering(ME4223)

4. Fluidized Bed Technology(ME4224)

5. Robotics (ME 4225)

6. Introduction to Biomechanics (ME 4226)

**OPEN ELECTIVE**

Students are to choose one OE from a list as declared and notified by the institute.

**Annexure-I**

1. **Subjects offered by ME Department to the other specified departments**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** | Department |
| **L** | **T** | **P** |
| 1. | ME2205 | Heat Power and Machine Elements | 3 | 1 | 0 | 4 | 4 | 100 | Mining Engg.  (4TH Sem) |
| 2. | ME2274 | Heat Power and Machine Elements  Laboratory | 0 | 0 | 3 | 3 | 2 | 50 | Mining Engg.  (4TH Sem) |
| 3 | ME 3106 | Heat Power | 3 | 0 | 0 | 3 | 3 | 100 | Elec Engg.  (5TH Sem) |
| 4 | ME 3174 | Heat Power Lab | 0 | 0 | 3 | 3 | 2 | 50 | Elec Engg.  (5TH Sem) |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject code** | **Course Name** | **Class Load/Week** | | | **Total Load (h)** | **Credit** | **Marks** | Department |
| **L** | **T** | **P** |
| 1. | ME4261 | Energy Storage Technology | 3 | 0 | 0 | 3 | 3 | 100 | All Depts.  (8TH Sem) |
| 2. | ME4262 | Solar and Wind Energy | 3 | 0 | 0 | 3 | 3 | 100 | All Depts  (8TH Sem) |

1. **Subjects offered by ME Department as Open Electives (OE)**