# COURSE STRUCTURE

**For**

# MECHANICAL ENGINEERING

*(Applicable for batches admitted from 2016-2017)*


**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**
**KAKINADA - 533 003, Andhra Pradesh, India**

## I Year - I Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1-HS | English – I | 4 | -- | -- | 3 |
| 2-BS | Mathematics - I | 4 | -- | -- | 3 |
| 3-ES | Engineering Chemistry | 4 | -- | -- | 3 |
| 4-BS | Engineering Mechanics | 4 | -- | -- | 3 |
| 5-BS | Computer Programming | 4 | -- | -- | 3 |
| 6-ES | Environmental Studies | 4 | -- | -- | 3 |
| 7-HS | Engineering/Applied Chemistry Laboratory | -- | -- | 3 | 2 |
| 8-BS | English - Communication Skills Lab - I | -- | -- | 3 | 2 |
| 9-ES | C Programming Lab | -- | -- | 3 | 2 |
| | **Total Credits** | | | | **24** |

## I Year - II Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1-HS | English – II | 4 | -- | -- | 3 |
| 2-BS | Mathematics – II (Mathematical Methods) | 4 | -- | -- | 3 |
| 3-BS | Mathematics – III | 4 | -- | -- | 3 |
| 4-ES | Engineering Physics | 4 | -- | -- | 3 |
| 5-HS | Basic Electrical and Electronics Engineering | 4 | -- | -- | 3 |
| 6-ES | Engineering Drawing | 4 | -- | -- | 3 |
| 7-BS | English - Communication Skills Lab - II | -- | -- | 3 | 2 |
| 8-HS | Engineering /Applied Physics Lab | -- | -- | 3 | 2 |
| 9-ES | Engineering /Applied Physics – Virtual Labs - Assignments | -- | -- | 2 | -- |
| 10 | Engg.Workshop & IT Workshop | -- | -- | 3 | 2 |
| | **Total Credits** | | | | **24** |

## II Year - I Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Metallurgy & Materials Science | 4 | -- | -- | 3 |
| 2 | Mechanics of Solids | 4 | -- | -- | 3 |
| 3 | Thermodynamics | 4 | -- | -- | 3 |
| 4 | Managerial Economics & Financial Analysis | 4 | -- | -- | 3 |
| 5 | Fluid Mechanics & Hydraulic Machines | 4 | -- | -- | 3 |
| 6 | Computer Aided Engineering Drawing Practice | 3 | 3 | -- | 3 |
| 7 | Electrical & Electronics Engg. Lab | -- | -- | 3 | 2 |
| 8 | Mechanics of Solids & Metallurgy Lab | -- | -- | 3 | 2 |
| | **Total Credits** | | | | **22** |

## II Year - II Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Kinematics of Machinery | 4 | -- | -- | 3 |
| 2 | Thermal Engineering -I | 4 | -- | -- | 3 |
| 3 | Production Technology | 4 | -- | -- | 3 |
| 4 | Design of Machine Members -I | 4 | -- | -- | 3 |
| 5 | Machine Drawing | 3 | 3 | -- | 3 |
| 6 | Industrial Engineering and Management | 4 | -- | -- | 3 |
| 7 | Fluid Mechanics & Hydraulic Machinery Lab | -- | -- | 3 | 2 |
| 8 | Production Technology Lab | -- | -- | 3 | 2 |
| | **Total Credits** | | | | **22** |

## III Year - I Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Dynamics of Machinery | 4 | -- | -- | 3 |
| 2 | Metal Cutting & Machine Tools | 4 | -- | -- | 3 |
| 3 | Design of Machine Members–II | 4 | -- | -- | 3 |
| 4 | Operations Research | 4 | -- | -- | 3 |
| 5 | Thermal Engineering -II | 4 | -- | -- | 3 |
| 6 | Theory of Machines Lab | -- | -- | 3 | 2 |
| 7 | Machine Tools Lab | -- | -- | 3 | 2 |
| 8 | Thermal Engineering Lab | -- | -- | 3 | 2 |
| 9 | IPR & Patents | -- | 2 | -- | -- |
| | **Total Credits** | | | | **21** |

## III YEAR - II Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Metrology | 4 | -- | -- | 3 |
| 2 | Instrumentation & Control Systems | 4 | -- | -- | 3 |
| 3 | Refrigeration & Air-conditioning | 4 | -- | -- | 3 |
| 4 | Heat Transfer | 4 | -- | -- | 3 |
| 5 | **OPEN ELECTIVE**<br>1. Entrepreneurship<br>2. Data Base Management System<br>3. Waste Water Management<br>4. Computer Graphics<br>5. Robotics<br>6. Green Engineering Systems | 4 | -- | -- | 3 |
| 6 | Heat Transfer Lab | -- | -- | 3 | 2 |
| 7 | Metrology & Instrumentation Lab | -- | -- | 3 | 2 |
| 8 | Computational Fluid Dynamics Lab | -- | -- | 3 | 2 |
| 9MC | Professional Ethics & Human Values | -- | 3 | -- | -- |
| | **Total Credits** | | | | **21** |

## IV Year - I Semester

| S. NO | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Mechatronics | 4 | -- | -- | 3 |
| 2 | CAD/CAM | 4 | -- | -- | 3 |
| 3 | Finite Element Methods | 4 | -- | -- | 3 |
| 4 | Power Plant Engineering | 4 | -- | -- | 3 |
| 5 | **Elective I**<br>1. Computational Fluid Dynamics<br>2. Condition Monitoring<br>3. Additive Manufacturing | 4 | -- | -- | 3 |
| 6 | **Elective II**<br>1. Advanced Materials<br>2. Design for Manufacture<br>3. Gas Dynamics & Jet Propulsion | 4 | -- | -- | 3 |
| 7 | CAD/CAM Lab | -- | -- | 2 | 2 |
| 8 | Mechatronics Lab | -- | -- | 2 | 2 |
| | **Total Credits** | | | | **22** |

## IV Year - II Semester

| S. No. | Subjects | L | T | P | Credits |
|---|---|---|---|---|---|
| 1 | Production Planning and Control | 4 | -- | -- | 3 |
| T 2 | Unconventional Machining Processes | 4 | -- | -- | 3 |
| 3 | Automobile Engineering | 4 | -- | -- | 3 |
| 4 | **Elective III**<br>1. Thermal Equipment Design<br>2. Non Destructive Evaluation<br>3. Quality and Reliability Engineering | 4 | -- | -- | 3 |
| 5 | Seminar | -- | 3 | -- | 2 |
| 6 | Project | -- | -- | -- | 10 |
| | **Total Credits** | | | | **24** |

**Total Course Credits = 48+44 + 42 + 46 = 180**