



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

B.TECH. in MECHANICAL ENGINEERING

COURSE STRUCTURE (R19)

Applicable From 2019-20 Admitted Batch

I YEAR I SEMESTER

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|-------------------------------------|-----------------|----------------|----------|-----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| | | Induction Programme | | 3 Weeks | | | | | - | - | - |
| THEORY | | | | | | | | | | | |
| 1 | 1910001 | Mathematics -I | BSC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 2 | 1910007 | Engineering Physics | BSC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 3 | 1910371 | Engineering Graphics | ESC | 1 | 0 | 4 | 5 | 3 | 30 | 70 | 100 |
| 4 | 1910501 | Programming for Problem Solving | ESC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 5 | 1910072 | Engineering Physics Lab | ESC | 0 | 0 | 3 | 3 | 1.5 | 30 | 70 | 100 |
| 6 | 1910571 | Programming for Problem Solving Lab | ESC | 0 | 0 | 3 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | 1910021 | Environmental Science | *MC | 3 | 0 | 0 | 3 | 0 | - | - | - |
| Total Credits | | | | 13 | 3 | 10 | 26 | 18 | 180 | 420 | 600 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|---------------------------|-----------------|----------------|----------|----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1920002 | Mathematics -II | BSC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 2 | 1920008 | Engineering Chemistry | BSC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 3 | 1920009 | English | HSMC | 2 | 0 | 0 | 2 | 2 | 30 | 70 | 100 |
| 4 | 1920301 | Engineering Mechanics | ESC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 5 | 1920372 | Engineering Workshop | ESC | 1 | 0 | 3 | 4 | 2.5 | 30 | 70 | 100 |
| 6 | 1920073 | Engineering Chemistry Lab | BSC | 0 | 0 | 3 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | 1920074 | Communicative English Lab | HSMC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| Total Credits | | | | 12 | 3 | 8 | 23 | 19 | 210 | 490 | 700 |

*MC – Satisfied/Unsatisfied

L - Lecture periods, T - Tutorial periods, P - Practical periods

II Year I Semester



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B.TECH. in MECHANICAL ENGINEERING

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|--|-----------------|----------------|----------|----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1930005 | Probability and Statistics & Complex Variables | BSC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 2 | 1930311 | Mechanics of Solids | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 3 | 1930312 | Material Science and Metallurgy | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 4 | 1930313 | Production Technology | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 5 | 1930314 | Thermodynamics | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 6 | 1930373 | Production Technology Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 7 | 1930374 | Machine Drawing Practice | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 8 | 1930375 | Material Science and Mechanics of Solids Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 9 | 1930023 | Constitution of India | *MC | 3 | 0 | 0 | 3 | 0 | - | - | - |
| Total Credits | | | | 18 | 3 | 6 | 27 | 21 | 240 | 560 | 800 |

II Year – II Semester

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|--|-----------------|----------------|----------|----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1940202 | Basic Electrical and Electronics Engineering | ESC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 2 | 1940315 | Kinematics of Machinery | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 3 | 1940316 | Thermal Engineering-I | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 4 | 1940317 | Fluid Mechanics and Hydraulic Machines | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 5 | 1940318 | Instrumentation and Control Systems | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 6 | 1940272 | Basic Electrical and Electronics Engineering Lab | ESC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 7 | 1940376 | Fluid Mechanics and Hydraulic Machines Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 8 | 1940377 | Instrumentation and Control Systems Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 9 | 1940022 | Gender Sensitization Lab | *MC | 0 | 0 | 2 | 2 | 0 | - | - | - |
| Total Credits | | | | 15 | 3 | 8 | 26 | 21 | 240 | 560 | 800 |



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B.TECH. in MECHANICAL ENGINEERING

III Year – I Semester

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|---|-----------------|----------------|----------|----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1950319 | Dynamics of Machinery | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 2 | 1950320 | Design of Machine Members -I | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 3 | 1950321 | Metrology & Machine Tools | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 4 | 1950010 | Business Economics & Financial Analysis | HSMC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 5 | 1950322 | Thermal Engineering - II | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 6 | 1950323 | Operations Research | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 7 | 1950378 | Thermal Engineering Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 8 | 1950379 | Metrology & Machine Tools Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 9 | 1950380 | Kinematics & Dynamics Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 10 | 1950024 | Intellectual Property Rights | *MC | 3 | 0 | 0 | 3 | 0 | - | - | - |
| Total Credits | | | | 21 | 1 | 6 | 28 | 22 | 270 | 630 | 900 |

III Year – II Semester

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|-----------------------------------|-----------------|----------------|----------|----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1960324 | Design of Machine Members - II | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 2 | 1960325 | Heat Transfer | PCC | 3 | 1 | 0 | 4 | 4 | 30 | 70 | 100 |
| 3 | 1960326 | CAD & CAM | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 4 | | Professional Elective - I | PEC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 5 | | Open Elective – I | OEC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 6 | 1960327 | Finite Element Methods | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| PRACTICALS | | | | | | | | | | | |
| 7 | 1960381 | Heat Transfer Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 8 | 1960382 | CAD & CAM Lab | PCC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 9 | 1960075 | Advanced Communication Skills lab | HSMC | 0 | 0 | 2 | 2 | 1 | 30 | 70 | 100 |
| 9 | 1960021 | Environmental Science | *MC | 3 | 0 | 0 | 2 | 0 | - | - | - |
| Total Credits | | | | 21 | 1 | 6 | 27 | 22 | 270 | 640 | 900 |



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IV Year – I Semester

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|---|-----------------|----------------|----------|-----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | 1970327 | Refrigeration & Air Conditioning | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 2 | | Professional Elective – II | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 3 | | Professional Elective – III | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 4 | | Professional Elective - IV | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 5 | | Open Elective - II | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 6 | 1970383 | Industrial Oriented Mini Project/ Summer Internship | PCC | 0 | 0 | 4 | 4 | 2* | - | 100 | 100 |
| 7 | 1970384 | Seminar | PCC | 0 | 0 | 2 | 2 | 1 | 100 | - | 100 |
| 8 | 1970385 | Project Stage - I | PCC | 0 | 0 | 6 | 6 | 3 | 100 | - | 100 |
| Total Credits | | | | 15 | 0 | 12 | 27 | 21 | 350 | 450 | 800 |

IV Year – II Semester

| S. No. | Course Code | Course Title | Course Category | Hours Per Week | | | Total Contact Hour | Credits | Scheme of Examination Maximum Marks | | |
|----------------------|-------------|----------------------------|-----------------|----------------|----------|-----------|--------------------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | | Internal (CIE) | External (SEE) | Total |
| THEORY | | | | | | | | | | | |
| 1 | | Professional Elective – V | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 2 | | Professional Elective - VI | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 3 | 1980304 | Open Elective - III | PCC | 3 | 0 | 0 | 3 | 3 | 30 | 70 | 100 |
| 4 | 1980386 | Project Stage - II | PCC | 0 | 0 | 14 | 14 | 7 | 30 | 70 | 100 |
| Total Credits | | | | 9 | 0 | 14 | 23 | 16 | 120 | 280 | 400 |

*MC - Environmental Science – Should be Registered by Lateral Entry Students Only.

*MC – Satisfactory/Unsatisfactory.

Note: Industrial Oriented Mini Project/ Summer Internship is to be carried out during the summer vacation between 6th and 7th semesters. Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.



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B.TECH. in MECHANICAL ENGINEERING

Professional Elective – I

| | |
|---------|------------------------------------|
| 1960340 | Unconventional Machining Processes |
| 1960341 | Machine Tool Design |
| 1960342 | Production Planning & Control |

Professional Elective – II

| | |
|---------|-----------------------------|
| 1970343 | Additive Manufacturing |
| 1970344 | Automation in Manufacturing |
| 1970345 | MEMS |

Professional Elective – III

| | |
|---------|--------------------------|
| 1970346 | Power Plant Engineering |
| 1970347 | Automobile Engineering |
| 1970348 | Renewable Energy Sources |

Professional Elective – IV

| | |
|---------|------------------------------|
| 1970349 | Computational Fluid Dynamics |
| 1970350 | Turbo Machinery |
| 1970351 | Fluid Power Systems |

Professional Elective – V

| | |
|---------|-----------------------|
| 1980352 | Industrial Robotics |
| 1980353 | Mechanical Vibrations |
| 1980354 | Composite Materials |

Professional Elective – VI

| | |
|---------|--------------------------------------|
| 1980355 | Industrial Management |
| 1980356 | Production and Operations Management |
| 1980357 | Tribology |