



# JEPPIAAR INSTITUTE OF TECHNOLOGY

"Self Belief | Self Discipline | Self Respect"

REGULATION - 2017

DEPARTMENT OF MECHANICAL ENGINEERING

I - VIII SEMESTERS CURRICULUM & SYLLABUS



| SEMESTER 1        |                        |  |   |   |   |   |
|-------------------|------------------------|--|---|---|---|---|
| S.NO              | COURSE CODE            | COURSE TITLE   | L | T | P | C |
| <b>THEORY</b>     |                        |  |   |   |   |   |
| 1                 | <a href="#">HS8151</a> | <a href="#">Communicative english</a>  | 4 | 0 | 0 | 4 |
| 2                 | <a href="#">MA8151</a> | <a href="#">Engineering Mathematics – I</a>                                  | 4 | 0 | 0 | 4 |
| 3                 | <a href="#">PH8151</a> | <a href="#">Engineering Physics</a>  | 3 | 0 | 0 | 3 |
| 4                 | <a href="#">CY8151</a> | <a href="#">Engineering Chemistry</a>  | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">GE8151</a> | <a href="#">Problem Solving and Python Programming</a>                       | 3 | 0 | 0 | 3 |
| 6                 | <a href="#">GE8152</a> | <a href="#">Engineering Graphics</a>   | 6 | 0 | 4 | 4 |
| <b>PRACTICALS</b> |                        |  |   |   |   |   |
| 7                 | <a href="#">GE8161</a> | <a href="#">Problem Solving and Python Programming Laboratory</a>            | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">BS8161</a> | <a href="#">Physics and Chemistry laboratory</a>                             | 0 | 0 | 4 | 2 |
| <b>SEMESTER 2</b> |                        |  |   |   |   |   |
| S.NO              | COURSE CODE            | COURSE TITLE   | L | T | P | C |
| <b>THEORY</b>     |                        |  |   |   |   |   |
| 1                 | <a href="#">HS8251</a> | <a href="#">Technical English</a>  | 4 | 0 | 0 | 4 |
| 2                 | <a href="#">MA8251</a> | <a href="#">Engineering Mathematics – II</a>                                 | 3 | 0 | 0 | 3 |
| 3                 | <a href="#">PH8251</a> | <a href="#">Material Science</a>   | 3 | 0 | 0 | 3 |
| 4                 | <a href="#">BE8253</a> | <a href="#">Basic Electrical, Electronics and Instrumentation Engine</a>     | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">GE8291</a> | <a href="#">Environmental Science and Engineering</a>                        | 3 | 0 | 0 | 3 |
| 6                 | <a href="#">GE8292</a> | <a href="#">Engineering Mechanics</a>  | 3 | 2 | 0 | 4 |
| <b>PRACTICALS</b> |                        |  |   |   |   |   |
| 7                 | <a href="#">GE8261</a> | <a href="#">Engineering Practices laboratory</a>                             | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">BE8261</a> | <a href="#">Basic Electrical, Electronics and Instrumentation Laboratory</a> | 0 | 0 | 4 | 2 |

| SEMESTER 3        |                        |  |   |   |   |   |
|-------------------|------------------------|--|---|---|---|---|
| S.NO              | COURSE CODE            | COURSE TITLE   | L | T | P | C |
| <b>THEORY</b>     |                        |  |   |   |   |   |
| 1                 | <a href="#">MA8353</a> | <a href="#">Transforms and Partial Differential Equations</a>                      | 4 | 0 | 0 | 4 |
| 2                 | <a href="#">ME8391</a> | <a href="#">Engineering Thermodynamics</a>   | 5 | 2 | 0 | 4 |
| 3                 | <a href="#">CE8394</a> | <a href="#">Fluid Mechanics and Machinery</a>                                      | 4 | 0 | 0 | 4 |
| 4                 | <a href="#">ME8351</a> | <a href="#">Manufacturing Technology I</a>   | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">EE8353</a> | <a href="#">Electrical Drives and Controls</a>                                     | 3 | 0 | 0 | 3 |
| <b>PRACTICALS</b> |                        |  |   |   |   |   |
| 6                 | <a href="#">ME8361</a> | <a href="#">Manufacturing Technology Laboratory I</a>                              | 0 | 0 | 4 | 2 |
| 7                 | <a href="#">ME8381</a> | <a href="#">Computer Aided Machine Drawing</a>                                     | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">EE8361</a> | <a href="#">Electrical Engineering Laboratory</a>                                  | 0 | 0 | 4 | 2 |
| 9                 | <a href="#">HS8381</a> | <a href="#">Interpersonal skill/Listening &amp; Speaking</a>                       | 0 | 0 | 2 | 1 |
| <b>SEMESTER 4</b> |                        |  |   |   |   |   |
| S.NO              | COURSE CODE            | COURSE TITLE   | L | T | P | C |
| <b>THEORY</b>     |                        |  |   |   |   |   |
| 1                 | <a href="#">MA8452</a> | <a href="#">Statistics and Numerical Methods</a>                                   | 4 | 0 | 0 | 4 |
| 2                 | <a href="#">ME8492</a> | <a href="#">Kinematics of Machinery</a>  | 3 | 0 | 0 | 3 |
| 3                 | <a href="#">ME8451</a> | <a href="#">Manufacturing Technology II</a>  | 3 | 0 | 0 | 3 |
| 4                 | <a href="#">ME8491</a> | <a href="#">Engineering Metallurgy</a>   | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">CE8395</a> | <a href="#">Strength of Materials for Mechanical Engineers</a>                     | 3 | 0 | 0 | 3 |
| 6                 | <a href="#">ME8493</a> | <a href="#">Thermal Engineering I</a>  | 3 | 0 | 0 | 3 |
| <b>PRACTICALS</b> |                        |  |   |   |   |   |
| 7                 | <a href="#">ME8462</a> | <a href="#">Manufacturing Technology Laboratory II</a>                             | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">CE8381</a> | <a href="#">Strength of Materials and Fluid Mechanics and Machinery Laboratory</a> | 0 | 0 | 4 | 2 |
| 9                 | <a href="#">HS8461</a> | <a href="#">Advanced Reading and Writing</a>                                       | 0 | 0 | 2 | 1 |
| <b>SEMESTER 5</b> |                        |  |   |   |   |   |
| S.NO              | COURSE CODE            | COURSE TITLE   | L | T | P | C |
| <b>THEORY</b>     |                        |  |   |   |   |   |
| 1                 | <a href="#">ME8595</a> | <a href="#">Thermal Engineering II</a>   | 3 | 0 | 0 | 3 |

| 2                 | <a href="#">ME8593</a> | <a href="#">Design of Machine Elements</a>              | 3 | 0 | 0 | 3 |
|-------------------|------------------------|---|---|---|---|---|
| 3                 | <a href="#">ME8501</a> | <a href="#">Metrology and Measurements</a>              | 3 | 0 | 0 | 3 |
| 4                 | <a href="#">ME8594</a> | <a href="#">Dynamics of Machines</a>                    | 4 | 0 | 0 | 4 |
| 5                 | <a href="#">OAT552</a> | <a href="#">Internal Combustion Engines</a>             | 3 | 0 | 0 | 3 |
| <b>PRACTICALS</b> |                        |   |   |   |   |   |
| 6                 | <a href="#">ME8511</a> | <a href="#">Kinematics and Dynamics Laboratory</a>      | 0 | 0 | 4 | 2 |
| 7                 | <a href="#">ME8512</a> | <a href="#">Thermal Engineering Laboratory</a>          | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">ME8513</a> | <a href="#">Metrology and Measurements Laboratory</a>   | 0 | 0 | 4 | 2 |
| <b>SEMESTER 6</b> |                        |   |   |   |   |   |
| S.NO              | COURSE CODE            | COURSE TITLE  | L | T | P | C |
| <b>THEORY</b>     |                        |   |   |   |   |   |
| 1                 | <a href="#">ME8651</a> | <a href="#">Design of Transmission Systems</a>          | 3 | 0 | 0 | 3 |
| 2                 | <a href="#">ME8691</a> | <a href="#">Computer Aided Design and Manufacturing</a> | 3 | 0 | 0 | 3 |
| 3                 | <a href="#">ME8693</a> | <a href="#">Heat and Mass Transfer</a>                  | 3 | 2 | 0 | 4 |
| 4                 | <a href="#">ME8692</a> | <a href="#">Finite Element Analysis</a>                 | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">ME8694</a> | <a href="#">Hydraulics and Pneumatics</a>               | 3 | 0 | 0 | 3 |
| 6                 | <a href="#">ME8091</a> | <a href="#">Automobile Engineering</a>                  | 3 | 0 | 0 | 3 |
| <b>PRACTICALS</b> |                        |   |   |   |   |   |
| 7                 | <a href="#">ME8681</a> | <a href="#">CAD/CAM Laboratory</a>                      | 0 | 0 | 4 | 2 |
| 8                 | <a href="#">ME8682</a> | <a href="#">Design and Fabrication Project</a>          | 0 | 0 | 4 | 2 |
| 9                 | <a href="#">HS8581</a> | <a href="#">Professional Communication</a>              | 0 | 0 | 2 | 1 |
| <b>SEMESTER 7</b> |                        |   |   |   |   |   |
| S.NO              | COURSE CODE            | COURSE TITLE  | L | T | P | C |
| <b>THEORY</b>     |                        |   |   |   |   |   |
| 1                 | <a href="#">ME8792</a> | <a href="#">Power Plant Engineering</a>                 | 3 | 0 | 0 | 3 |
| 2                 | <a href="#">ME8793</a> | <a href="#">Process Planning and Cost Estimation</a>    | 3 | 0 | 0 | 3 |
| 3                 | <a href="#">ME8791</a> | <a href="#">Mechatronics</a>                            | 3 | 0 | 0 | 3 |
| 4                 | <a href="#">OML751</a> | <a href="#">Testing of Materials</a>                    | 3 | 0 | 0 | 3 |
| 5                 | <a href="#">ME8073</a> | <a href="#">Unconventional Machining Processes</a>      | 3 | 0 | 0 | 3 |
| 6                 | <a href="#">ME8097</a> | <a href="#">Non Destructive Testing and Evaluation</a>  | 3 | 0 | 0 | 3 |

| <b>PRACTICALS</b> |                        |  |          |          |          |          |
|-------------------|------------------------|--|----------|----------|----------|----------|
| 7                 | <a href="#">ME8711</a> | <a href="#">Simulation and Analysis Laboratory</a> | 0        | 0        | 4        | 2        |
| 8                 | <a href="#">ME8781</a> | <a href="#">Mechatronics Laboratory</a>            | 0        | 0        | 4        | 2        |
| 9                 | <a href="#">ME8712</a> | <a href="#">Technical Seminar</a>                  | 0        | 0        | 2        | 1        |
| <b>SEMESTER 8</b> |                        |  |          |          |          |          |
| <b>S.NO</b>       | <b>COURSE CODE</b>     | <b>COURSE TITLE</b>                                | <b>L</b> | <b>T</b> | <b>P</b> | <b>C</b> |
| <b>THEORY</b>     |                        |  |          |          |          |          |
| 1                 | <a href="#">MG8591</a> | <a href="#">Principles of Management</a>           | 3        | 0        | 0        | 3        |
| 2                 |                        | <a href="#">Professional Elective-IV</a>           | 3        | 0        | 0        | 3        |
| <b>PRACTICALS</b> |                        |  |          |          |          |          |
| 3                 | ME8811                 | Project Work                                       |          |          | 20       | 10       |

**SEMESTER 1**

**Course Outcome No.101**

Subject Code & Name : HS8151 -communicative english

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO101.1            | Enable the development of basic grammar to enhance language for a better communication   | K3, A2                  |
| CO101.2            | Strengthen general comprehending skills and present lucid skills in free writing   | K2, A2                  |
| CO101.3            | Foster an environment for reading and develop good language skills.  | A2                      |
| CO101.4            | Speak, read and write effectively for a variety of professional and social settings  | A2                      |
| CO101.5            | Listen, comprehend and respond to different spoken and written discourses/excerpts in different accents and write different genres of texts adopting various writing strategies. | A3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO101.1    | K3, A2      | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | -     | 3     |                           |       |       |
| CO101.2    | K2, A2      | -                | -    | -    | -    | -        | -    | -    | -    | 2    | 2     | -     | 3     |                           |       |       |
| CO101.3    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | -     | 3     |                           |       |       |
| CO101.4    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | -     | 3     |                           |       |       |
| CO101.5    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | 2     | -     | 3     |                           |       |       |

**Course Outcome No.102**

Subject Code & Name : MA8151 - Engineering Mathematics – I

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO102.1            | Use both the limit definition and rules of differentiation to differentiate functions   | K2                      |
| CO102.2            | Associate differentiation to solve maxima and minima problems   | K2                      |
| CO102.3            | Discuss integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus Also Evaluate integrals using techniques of integr          | K2                      |
| CO102.4            | Associate integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables | K2                      |
| CO102.5            | Explain various techniques in solving differential equations  | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| C102.1     | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |
| C102.2     | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |
| C102.3     | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |
| C102.4     | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |
| C102.5     | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |

**Course Outcome No.103**

Subject Code & Name :PH8151 - Engineering Physics

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO103.1            | Explain the basics of properties of matter and its applications.   | K2                      |
| CO103.2            | Identify the concepts of waves and optical devices and their applications in fibre optics                                  | K2                      |
| CO103.3            | Demonstrate the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers | K2                      |
| CO103.4            | Describe advanced physics concepts of quantum theory and its applications in tunneling microscopes                         | K2                      |
| CO103.5            | Summarize the basics of crystals and their structures and different crystal growth techniques                              | K2                      |



**Course Outcome No.106**

Subject Code & Name : GE8152 - Engineering Graphics

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO106.1            | Discuss about conics and orthographic views of engineering components. | K2                      |
| CO106.2            | Draw the projection of points, lines and planes.                       | K1                      |
| CO106.3            | Classify solids and projection of solids at different positions.       | K3                      |
| CO106.4            | Show sectioned view of solids and development of surface.              | K3                      |
| CO106.5            | Draw isometric projection and perspective views of an object/solid.    | K1                      |
| CO106.6            | Apply the concept of drawing in practical applications.                | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |  |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|--|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |  |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |  |
| CO106.1    | K2          | 2                |      |      |      |          |      |      |      |      |       |       | 2     |                           |       |       |  |
| CO106.2    | K1          | 1                |      |      |      |          |      |      |      |      |       |       | 1     |                           |       |       |  |
| CO106.3    | K3          | 3                |      |      |      |          |      |      |      |      |       |       | 3     |                           |       |       |  |
| CO106.4    | K3          | 3                |      |      |      |          |      |      |      |      |       |       | 3     |                           |       |       |  |
| CO106.5    | K1          | 1                |      |      |      |          |      |      |      |      |       |       | 1     |                           |       |       |  |
| CO106.6    | K3          | 3                |      | 2    |      |          |      |      |      |      |       |       | 3     |                           |       |       |  |

**Course Outcome No.107**

Subject Code & Name : GE8161- Problem solving and python programming laborator

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO107.1            | Write, test, and debug simple Python programs.                                 | K1                      |
| CO107.2            | Apply the concept of conditionals and loops in Python programs.                | K3                      |
| CO107.3            | Develop the Python programs step-wise by defining functions and calling them.  | K3                      |
| CO107.4            | Use Python lists, tuples, dictionaries for representing compound data.         | K3                      |
| CO107.5            | Read and write data from/to files in Python.                                   | K1                      |
| CO107.6            | Apply the concept of Pygame.   | K3                      |
| CO107.7            | Exhibit ethical principles in engineering practices.                           | A3                      |
| CO107.8            | Perform task as an individual and / or team member to manage the task in time. | A3                      |
| CO107.9            | Express the Engineering activities with effective presentation and report.     | A3                      |
| CO107.10           | Interpret the findings with appropriate technological / research citation.     | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |  |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|--|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |  |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |  |
| CO107.1    | K1          | 1                | 1    | 1    | 1    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.2    | K3          | 3                | 2    | 2    | 1    | 3        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.3    | K3          | 3                | 3    | 3    | 2    | 3        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.4    | K3          | 3                | 2    | 2    | 1    | 3        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.5    | K1          | 1                | 1    | 1    | 1    | 1        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.6    | K3          | 3                | 2    | 2    | 1    | 3        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |  |
| CO107.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |  |
| CO107.9    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |  |
| CO107.10   | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | 3     | -                         | -     | -     |  |

**Course Outcome No.108**

Subject Code & Name :BSS161 -Physics and chemistry laboratory

Department: MECH

Year/Sem: I/01

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO108.1            | Determine the Modulus of elasticity of materials and Coefficient of Viscosity of liquids.  | K2                      |
| CO108.2            | Determine the Thermal Conductivity of bad conductor using Lee's disc method  | K2                      |
| CO108.3            | Calculate the Compressibility of liquids and velocity of ultrasonic waves in liquids.  | K2                      |
| CO108.4            | Measure the wavelength of prominent spectral lines of Mercury Spectrum and particle size of powder using diffraction phenomenon and thickness of thin materials using interference phenomenon. | K2                      |
| CO108.5            | Determine the band gap energy of a semiconductor.  | K2                      |
| CO108.6            | Calculate water quality parameters such as hardness, alkalinity of the given water sample.   | K2                      |
| CO108.7            | Estimate the amount of the given acids using conductometric titrations.  | K2                      |
| CO108.8            | Estimate the amount of the given acids using pH titrations.  | K2                      |
| CO108.9            | Determine the amount of iron content in the given substance using potentiometric titration.  | K2                      |
| CO108.10           | Determine the amount of chloride content in the given water sample.  | K2                      |
| CO108.11           | Exhibit ethical principles in engineering practices.   | A3                      |
| CO108.12           | Perform task as an individual and / or team member to manage the task in time.   | A3                      |
| CO108.13           | Express the Engineering activities with effective presentation and report.   | A3                      |
| CO108.14           | Interpret the findings with appropriate technological / research citation.   | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |  |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|--|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |  |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |  |
| CO108.1    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.2    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.3    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.4    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.5    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.6    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.7    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.8    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.9    | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.10   | K2          | 2                | 1    |      |      |          |      |      |      |      |       |       |       |                           |       |       |  |
| CO108.11   | A3          |                  |      |      |      |          |      |      | 3    |      |       |       |       |                           |       |       |  |
| CO108.12   | A3          |                  |      |      |      |          |      |      |      | 3    |       | 3     |       |                           |       |       |  |
| CO108.13   | A3          |                  |      |      |      |          |      |      |      |      | 3     |       |       |                           |       |       |  |
| CO108.14   | A2          |                  |      |      |      |          |      |      |      |      |       |       | 3     |                           |       |       |  |



**SEMESTER-2**

**Course Outcome No.109**

Subject Code & Name : HS8251 & Technical English

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO109.1            | Breakdown the ideas in to its elementary constituents, analyze and act after a meaning full thought process.   | K2,A2                   |
| CO109.2            | Analyze the phrase and passage and explicitly pass on the ideas meaning fully.   | K3,A2                   |
| CO109.3            | Manage to interpret the given phrase or the graphical rendering and review the contents well individually or as a group.   | K3,A2                   |
| CO109.4            | Concentrate on the communication aspect of complicated ideas and respond positively.   | A2                      |
| CO109.5            | Debate the issues and find the rudiments of the problem individually and as a group. And respond intelligently and seek clarification and understand completely. | A3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |   |
| CO109.1    | K2,A2       | -                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | 2     | -                         | 3     | -     | - | - |
| CO109.2    | K3,A2       | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | 2     | -     | 3                         | -     | -     | - |   |
| CO109.3    | K3,A2       | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | -     | 3     | -                         | -     | -     |   |   |
| CO109.4    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 2     | -     | 3     | -                         | -     | -     |   |   |
| CO109.5    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | 3     | -     | 2     | -                         | -     | -     |   |   |

**Course Outcome No.110**

Subject Code & Name : MA8251 & Engineering Mathematics – II

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO110.1            | Diagonalize symmetric matrices and similar matrices using Eigen values and Eigen vectors.   | K2                      |
| CO110.2            | Explain gradients, potential functions, and directional derivatives of functions of several variables. Also Compute line, surface and volume integral using Gauss | K2                      |
| CO110.3            | Discuss analytic functions in heat and fluid flow.  | K2                      |
| CO110.4            | Extend the concept of contour integrals in evaluating Real integrals.   | K2                      |
| CO110.5            | Discuss Laplace Transform methods to solve initial value problems for constant coefficient linear ODEs.   | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO110.1    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO110.2    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO110.3    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO110.4    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO110.5    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |

**Course Outcome No.111**

Subject Code & Name : PH8251 & Material Science

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO111.1            | Explain phase rule, lever rule, Tie-Line rule, solid solutions, various phase diagrams and their applications      | K2                      |
| CO111.2            | Illustrate Fe-Fe3C phase diagram, microstructures of steel during cooling and alloys                               | K2                      |
| CO111.3            | Describe mechanical properties of materials and their measurements.  | K2                      |
| CO111.4            | Demonstrate magnetic, dielectric and superconducting properties of materials                                       | K2                      |
| CO111.5            | Elucidate the basics of ceramics, composites, metallic glasses, smart materials, nanomaterial and carbon nanotubes | K2                      |



**Course Outcome No.114**

Subject Code & Name : GE8292 & Engineering Mechanics

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO114.1            | Compute the resultant force for planar and spatial system of forces.  | K2                      |
| CO114.2            | Estimate the force, moment for planar and spatial system of forces.   | K2                      |
| CO114.3            | Compute the centroid, second moment of area, center of gravity, product moment of inertia and mass moment of inertia. | K2                      |
| CO114.4            | Compute the motion parameters like displacement, velocity, acceleration using dynamics.                               | K2                      |
| CO114.5            | Compute the reaction force by applying principles of friction and the motion parameters of rigid body.                | K2                      |
|                    |   |                         |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO114.1    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 1     | -     |
| CO114.2    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 1     | -     |
| CO114.3    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 1     | -     |
| CO114.4    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 1     | -     |
| CO114.5    | K2          | 2                | 1    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 1     | -     |

**Course Outcome No.115**

Subject Code & Name : GE8261 Engineering Practices laboratory

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO115.1            | Apply the knowledge of pipeline connections to household fittings and industrial buildings. | K2                      |
| CO115.2            | Prepare the different joints in roofs, doors, windows and furniture.                        | K2                      |
| CO115.3            | Perform step turning operation in a lathe.  | K2                      |
| CO115.4            | Perform the various welding processes and know about its applications.                      | K2                      |
| CO115.5            | Produce a funnel using sheet metal.   | K2                      |
| CO115.6            | Exhibit ethical principles in engineering practices.  | A3                      |
| CO115.7            | Perform task as an individual and / or team member to manage the task in time.              | A3                      |
| CO115.8            | Express the Engineering activities with effective presentation and report.                  | A3                      |
| CO115.9            | Interpret the findings with appropriate technological / research citation.                  | A2                      |
|                    |   |                         |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO115.1    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO115.2    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO115.3    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO115.4    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO115.5    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO115.6    | A3          |                  |      |      |      |          |      |      | 3    |      |       |       |       |                           |       |       |
| CO115.7    | A3          |                  |      |      |      |          |      |      |      | 3    |       | 3     |       |                           |       |       |
| CO115.8    | A3          |                  |      |      |      |          |      |      |      |      | 3     |       |       |                           |       |       |
| CO115.9    | A2          |                  |      |      |      |          |      |      |      |      |       |       | 3     |                           |       |       |

**Course Outcome No.116**

Subject Code & Name : BE8261 & Basic Electrical, Electronics and Instrumentation Laboratory

Department: MECH

Year/Sem: I/02

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO116.1            | Ability to determine the speed characteristic of different electrical machines | K2                      |
| CO116.2            | Ability to design simple circuits involving diodes and transistors             | K2                      |
| CO116.3            | Ability to use operational amplifiers  | K2                      |
| CO116.4            | Exhibit ethical principles in engineering practices.                           | A3                      |
| CO116.5            | Perform task as an individual and / or team member to manage the task in time. | A3                      |
| CO116.6            | Express the Engineering activities with effective presentation and report.     | A3                      |
| CO116.7            | Interpret the findings with appropriate technological / research citation.     | A2                      |
|                    |  |                         |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |
| CO116.1    | K2          | 2                | 1    | 1    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 2     | -     | - |
| CO116.2    | K2          | 2                | 1    | 1    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 2     | -     | - |
| CO116.3    | K2          | 2                | 1    | 1    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | 2     | -     | - |
| CO116.4    | A3          |                  |      |      |      |          |      |      |      | 3    |       |       |       |                           |       |       |   |
| CO116.5    | A3          |                  |      |      |      |          |      |      |      |      | 3     |       | 3     |                           |       |       |   |
| CO116.6    | A3          |                  |      |      |      |          |      |      |      |      |       | 3     |       |                           |       |       |   |
| CO116.7    | A2          |                  |      |      |      |          |      |      |      |      |       |       |       | 3                         |       |       |   |

**SEMESTER 3**

**Course Outcome No.201**

Subject Code & Name :MA8353 & Transforms and Partial Differential Equations Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| C201.1             | Understand how to solve the given standard partial differential equations  | K3                      |
| C201.2             | Solve differential equations using Fourier series analysis which plays a vital role in engineering applications  | K3                      |
| C201.3             | Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equation          | K3                      |
| C201.4             | Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the problems | K4                      |
| C201.5             | Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems                 | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| C201.1     | K3          | 3                | 2    | 2    | -    | -        | -    | 2    | -    | 2    | 1     | -     | -     | -                         | -     | -     |
| C201.2     | K3          | 3                | 2    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| C201.3     | K3          | 3                | 2    | 2    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| C201.4     | K4          | 2                | 3    | 3    | -    | -        | -    | -    | 1    | 1    | -     | -     | -     | -                         | -     | -     |
| C201.5     | K3          | 3                | 2    | 1    | -    | -        | -    | -    | 2    | 1    | -     | -     | -     | -                         | -     | -     |

2

**Course Outcome No.202**

Subject Code & Name : ME8391 & Engineering Thermodynamics

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO202.1            | Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions. | K3                      |
| CO202.2            | Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.          | K3                      |
| CO202.3            | Analyze performance of steam power plant.  | K3                      |
| CO202.4            | Understand the concept of simple thermodynamic relations of ideal and real gases.                              | K2                      |
| CO202.5            | Analyze the properties of gas mixtures and moist air.  | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO202.1    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO202.2    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO202.3    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO202.4    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO202.5    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |

3

**Course Outcome No.203**

Subject Code & Name : CE8394 & Fluid Mechanics and Machinery

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO203.1            | Apply and Solve problems related to the properties of the fluids and mechanics of fluids  | K2                      |
| CO203.2            | Analyze the concept of dynamics of fluids, control volume approach, transportation of mass, momentum and energy principles, laws of flow through pipes etc. | K3                      |
| CO203.3            | Design, solve and apply problems related to Dimensional Parameters and Analysis.  | K2                      |
| CO203.4            | Design and solve problems related to Similarity laws and Model Analysis.  | K2                      |
| CO203.5            | Design and solve problems and power required to drive the different types of pumps.   | K2                      |
| CO203.6            | Design and solve problems and power required to drive the different types of turbines.  | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO203.1    | K2          | 2                | 2    | 1    | 2    | 1        | 1    |      |      | 1    |       |       | 1     | 3                         | 1     |       |
| CO203.2    | K3          | 3                | 2    | 2    | 1    | 1        | 1    |      |      | 1    |       |       | 1     | 2                         | 3     |       |
| CO203.3    | K2          | 2                | 2    | 2    | 1    | 2        | 2    |      |      | 1    |       |       | 1     | 2                         | 2     |       |
| CO203.4    | K2          | 3                | 2    | 2    | 1    | 2        | 2    |      |      | 1    |       |       | 1     | 2                         | 2     |       |
| CO203.5    | K2          | 3                | 2    | 2    | 1    | 1        | 1    |      |      | 1    |       |       | 1     | 2                         | 2     |       |
| CO203.6    | K2          | 3                | 2    | 2    | 1    | 1        | 1    |      |      | 1    |       |       | 1     | 3                         |       |       |

4

**Course Outcome No.204**

Subject Code & Name : ME8351 & Manufacturing Technology I

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO204.1            | Explain the process of making patterns, preparation of sand mould, various special casting processes and casting defects. | K2                      |
| CO204.2            | Describe various fusion, pressure, friction and special welding processes, soldering and brazing processes.               | K2                      |
| CO204.3            | Employ the appropriate metal forming techniques to produce components like hexagonal bolt, nut etc.,                      | K3                      |
| CO204.4            | Illustrate the various sheet metal forming processes for a specific application.  | K3                      |
| CO204.5            | Describe the properties and bonding techniques of plastics and various plastic molding techniques.                        | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO204.1    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  |       |
| CO204.2    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  |       |
| CO204.3    | K3          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO204.4    | K3          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO204.5    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 2                         | ----  |       |

5

**Course Outcome No.205**

Subject Code & Name : EE8353 & Electrical Drives and Controls

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO205.1            | Explain the basic concepts of Electric drives and the loading conditions with selection of rating for drive motors | K2                      |
| CO205.2            | Summarize the different characteristics of DC shunt motors with braking mechanisms and type of loads               | K2                      |
| CO205.3            | Describe the different starting methods of DC motors and three phase motors  | K2                      |
| CO205.4            | Contrast with the conventional and solid-state control of DC drives and their applications                         | K2                      |
| CO205.5            | Discuss the speed control of AC machines and the using of converters in their applications                         | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO205.1    | K2          | ----             | ---- | ---- | ---- | ----     | 2    | 2    | 1    | 2    | 2     | 1     | ----  | 1                         | 2     |       |
| CO205.2    | K2          | ----             | ---- | ---- | ---- | ----     | 3    | 1    | 2    | 3    | 2     | 1     | ----  | ----                      | 3     |       |
| CO205.3    | K2          | ----             | ---- | ---- | ---- | ----     | 2    | 2    | 1    | 3    | 3     | 1     | ----  | ----                      | 3     |       |
| CO205.4    | K2          | ----             | ---- | ---- | ---- | ----     | 3    | 2    | 1    | 3    | 2     | 1     | ----  | ----                      | 3     |       |
| CO205.5    | K2          | ----             | ---- | ---- | ---- | ----     | 3    | 1    | 3    | 3    | 2     | 1     | ----  | ----                      | 3     |       |

**Course Outcome No.206**

Subject Code & Name : ME8361 & Manufacturing Technology Laboratory I

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO206.1            | Explain the process of making patterns, preparation of sand mould, various special casting processes and casting defects. | K2                      |
| CO206.2            | Describe various fusion, pressure, friction and special welding processes, soldering and brazing processes.               | K2                      |
| CO206.3            | Employ the appropriate metal forming techniques to produce components like hexagonal bolt, nut etc.,                      | K3                      |
| CO206.4            | Illustrate the various sheet metal forming processes for a specific application.  | K3                      |
| CO206.5            | Describe the properties and bonding techniques of plastics and various plastic molding techniques.                        | K2                      |
| CO206.6            | Exhibit ethical principles in engineering practices   | A3                      |
| CO206.7            | Perform task as an individual and / or team member to manage the task in time   | A3                      |
| CO206.8            | Express the Engineering activities with effective presentation and report.  | A3                      |
| CO206.9            | Interpret the findings with appropriate technological / research citation.  | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |      |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |      |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |      |
| CO206.1    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO206.2    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO206.3    | K3          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO206.4    | K3          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO206.5    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO206.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     | -    |
| CO206.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     | -    |
| CO206.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     | -    |
| CO206.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     | -    |

**Course Outcome No.207**

Subject Code & Name : ME8381 & Computer Aided Machine Drawing

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO207.1            | Understand the drawing standards, fits and tolerances.                        | K2                      |
| CO207.2            | Understand the 2D drafting techniques.  | K3                      |
| CO207.3            | Recreate part drawings using CAD software.                                    | K3                      |
| CO207.6            | Exhibit ethical principles in engineering practices                           | A3                      |
| CO207.7            | Perform task as an individual and / or team member to manage the task in time | A3                      |
| CO207.8            | Express the Engineering activities with effective presentation and report.    | A3                      |
| CO207.9            | Interpret the findings with appropriate technological / research citation.    | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |      |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |      |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |      |
| CO207.1    | K2          | 2                | ---- | ---- | ---- | 3        | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | 2     | ---- |
| CO207.2    | K3          | 3                | ---- | ---- | ---- | 3        | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | 3     | ---- |
| CO207.3    | K3          | 3                | ---- | ---- | ---- | 3        | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | 3     | ---- |
| CO207.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     | -    |
| CO207.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     | -    |
| CO207.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     | -    |
| CO207.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     | -    |

**Course Outcome No.208**

Subject Code & Name : EE8361 & Electrical Engineering Laboratory

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO208.1            | skilled to perform load test O.C.C and Load characteristics of DC Shunt and DC Series generator | K5                      |
| CO208.2            | ability to perform load test, O.C & S.C on a single phase transformer                           | K5                      |
| CO208.3            | ability to find regulation of an alternator by EMF & MMF methods                                | K5                      |
| CO208.4            | skilled to find V curves and inverted V curves of synchronous motor                             | K5                      |
| CO208.5            | ability to find load test and speed control on single phase and three phase induction motor.    | K5                      |
| CO208.6            | Exhibit ethical principles in engineering practices   | A3                      |
| CO208.7            | Perform task as an individual and / or team member to manage the task in time                   | A3                      |
| CO208.8            | Express the Engineering activities with effective presentation and report.                      | A3                      |
| CO208.9            | Interpret the findings with appropriate technological / research citation.                      | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |
| CO208.1    | K5          | 3                | 3    | 3    | 3    | 3        | -    | -    | -    | 3    | -     | -     | -     | -                         | -     | -     | - |
| CO208.2    | K5          | 3                | 3    | 3    | 3    | 3        | -    | -    | -    | 3    | -     | -     | -     | -                         | -     | -     | - |
| CO208.3    | K5          | 3                | 3    | 3    | 3    | 3        | -    | -    | -    | 3    | -     | -     | -     | -                         | -     | -     | - |
| CO208.4    | K5          | 3                | 3    | 3    | 3    | 3        | -    | -    | -    | 3    | -     | -     | -     | -                         | -     | -     | - |
| CO208.5    | K5          | 3                | 3    | 3    | 3    | 3        | -    | -    | -    | 3    | -     | -     | -     | -                         | -     | -     | - |
| CO208.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     | - |
| CO208.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     | - |
| CO208.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     | - |
| CO208.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     | - |

**Course Outcome No.209**

Subject Code & Name : HSR381 & Interpersonal skill/Listening & Speaking

Department: MECH

Year/Sem: II/03

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO209.1            | Involves the students in Presentations and Group Discussions to improve the listening and speaking skills | K2                      |
| CO209.2            | Analyse, distinguish and Prepare their own resume and report.   | K2                      |
| CO209.3            | Practice on national and international exams to improve the verbal ability of the students                | K2                      |
| CO209.4            | Fosters interview skills so as to be successful in them.  | K2                      |
| CO209.5            | Promotes adequate Soft Skills required for the workplace and long-term career.                            | K2                      |
| CO209.6            | Exhibit ethical principles in engineering practices   | A3                      |
| CO209.7            | Perform task as an individual and / or team member to manage the task in time                             | A3                      |
| CO209.8            | Express the Engineering activities with effective presentation and report.                                | A3                      |
| CO209.9            | Interpret the findings with appropriate technological / research citation.                                | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |
| CO209.1    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     | - |
| CO209.2    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     | - |
| CO209.3    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     | - |
| CO209.4    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     | - |
| CO209.5    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     | - |
| CO209.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     | - |
| CO209.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     | - |
| CO209.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     | - |
| CO209.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     | - |



**SEMESTER 4**

**Course Outcome No.210**

Subject Code & Name :MA8452 Statistics and Numerical Methods

Department: MECH

Year/Sem: II/04

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO210.1            | Apply the concept of testing of hypothesis for small and large samples in real life problems.  | K2                      |
| CO210.2            | Apply the basic concepts of classifications of design of experiments in the field of agriculture.  | K3                      |
| CO210.3            | Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering pr | K2                      |
| CO210.4            | Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.                                     | K4                      |
| CO210.5            | Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications               | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |  |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|--|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |  |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |  |
| CO210.1    | K2          | 3                | 3    | 3    | 2    |          |      |      |      |      |       |       |       |                           | 2     | 3     |  |
| CO210.2    | K3          | 3                | 3    | 2    | 2    |          |      |      |      |      |       |       |       |                           | 3     | 3     |  |
| CO210.3    | K2          | 3                | 3    | 2    | 2    |          |      |      |      |      |       |       |       |                           | 2     | 3     |  |
| CO210.4    | K4          | 3                | 3    | 3    | 3    | 2        | 1    | 1    | 1    | 1    | 1     | 1     | 3     | 3                         | 3     | 3     |  |
| CO210.5    | K3          | 3                | 3    | 2    | 2    | 2        | 1    | 1    | 1    | 1    | 1     | 1     | 3     | 3                         | 3     | 3     |  |

2

**Course Outcome No.211**

Subject Code & Name : ME8492 & Kinematics of Machinery

Department: MECH

Year/Sem: II/04

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| C0211.1            | Explain the basics of mechanism                          | K2                      |
| C0211.2            | Determine velocity and acceleration in simple mechanisms | K3                      |
| C0211.3            | Develop CAM profiles                                     | K3                      |
| C0211.4            | Solve problems on gears and gear trains                  | K3                      |
| C0211.5            | Examine friction in machine elements                     | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| C0211.1    | K3          | 2                | 2    | 2    | ---  | ---      | ---  | ---  | ---  | ---  | ---   | ---   | ---   | 3                         | ---   |       |
| C0211.2    | K3          | 3                | 2    | 2    | ---  | ---      | ---  | ---  | ---  | ---  | ---   | ---   | ---   | 3                         | ---   |       |
| C0211.3    | K3          | 3                | 2    | 2    | ---  | ---      | ---  | ---  | ---  | ---  | ---   | ---   | ---   | 3                         | ---   |       |
| C0211.4    | K3          | 3                | 2    | 2    | ---  | ---      | ---  | ---  | ---  | ---  | ---   | ---   | ---   | 3                         | ---   |       |
| C0211.5    | K3          | 3                | 2    | 2    | ---  | ---      | ---  | ---  | ---  | ---  | ---   | ---   | ---   | 3                         | ---   |       |

3

**Course Outcome No.212**

Subject Code & Name : ME8451 & Manufacturing Technology II

Department: MECH

Year/Sem: II/04

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO212.1            | Explain the mechanics of metal cutting, cutting tool materials, tool wear and cutting fluids.                         | K2                      |
| CO212.2            | Discuss about the constructional feature of different types of lathe and their operations.                            | K2                      |
| CO212.3            | Describe the construction & working of shaping, milling & drilling machines and gear cutting & finishing process.     | K2                      |
| CO212.4            | Illustrate the various types of grinding machines and broaching machines.   | K4                      |
| CO212.5            | Explain the construction feature of different types of CNC machine and manual part programming for a given component. | K2                      |





**Course Outcome No.217**

Subject Code & Name :CE8381 & Strength of Materials and Fluid Mechanics and Machinery Laboratory

Department: MECH

Year/Sem: II/04

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO217.1            | Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials. | K2                      |
| CO217.2            | Use the measurement equipments for flow measurement.                                      | K3                      |
| CO217.3            | Perform test on different fluid machinery.  | K2                      |
| CO217.4            | Exhibit ethical principles in engineering practices                                       | A3                      |
| CO217.5            | Perform task as an individual and / or team member to manage the task in time             | A3                      |
| CO217.6            | Express the Engineering activities with effective presentation and report.                | A3                      |
| CO217.7            | Interpret the findings with appropriate technological / research citation.                | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO217.1    | K2          | 2                | 2    | 2    |      | 2        | 2    |      | 3    |      | 2     |       |       | 3                         | 1     | ----  |
| CO217.2    | K3          | 1                | 2    | 2    |      | 2        | 2    |      | 2    |      | 2     |       |       | 2                         | 3     | ----  |
| CO217.3    | K2          | 1                | 1    | 1    |      | 1        | 1    |      | 2    |      | 2     |       |       | 2                         | 2     | ----  |
| CO217.4    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO217.5    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO217.6    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | 3     | -     | -     | -                         | -     | -     |
| CO217.7    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |

**Course Outcome No.218**

Subject Code & Name :HS8461 & Advanced Reading and Writing

Department: MECH

Year/Sem: II/04

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO218.1            | Strengthen the reading skills of students through reading activities.                | K2                      |
| CO218.2            | Enhance their writing skills with specific reference to technical writing.           | K2                      |
| CO218.3            | Develop students' critical thinking skills   | K2                      |
| CO218.4            | Develop felicity of expression and familiarity with technology enabled Communication | K2                      |
| CO218.5            | Foster an environment for reading and develop good language skills.                  | K2                      |
| CO218.6            | Exhibit ethical principles in engineering practices                                  | A3                      |
| CO218.7            | Perform task as an individual and / or team member to manage the task in time        | A3                      |
| CO218.8            | Express the Engineering activities with effective presentation and report.           | A3                      |
| CO218.9            | Interpret the findings with appropriate technological / research citation.           | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO218.1    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     |
| CO218.2    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     |
| CO218.3    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     |
| CO218.4    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     |
| CO218.5    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | -     |
| CO218.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO218.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO218.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |
| CO218.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |

**SEMESTER 5**

**Course Outcome No.301**

Subject Code & Name : ME8595 & Thermal Engineering II

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO301.1            | Solve problems in Steam Nozzle   | K3                      |
| CO301.2            | Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters. | K2                      |
| CO301.3            | Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.                        | K3                      |
| CO301.4            | Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers                                | K2                      |
| CO301.5            | Solve problems using refrigerant table / charts and psychrometric charts   | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |      |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |      |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |      |
| CO301.1    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO301.2    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO301.3    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO301.4    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO301.5    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |

2

**Course Outcome No.302**

Subject Code & Name : ME8593 & Design of Machine Elements

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO302.1            | Explain the influence of steady and variable stresses in machine component design.        | K2                      |
| CO302.2            | Apply the concepts of design to shafts, keys and couplings.                               | K3                      |
| CO302.3            | Apply the concepts of design to temporary and permanent joints.                           | K3                      |
| CO302.4            | Apply the concepts of design to energy absorbing members, connecting rod and crank shaft. | K3                      |
| CO302.5            | Apply the concepts of design to bearings.   | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |      |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |      |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |      |
| CO302.1    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO302.2    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO302.3    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO302.4    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO302.5    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |

3

**Course Outcome No.303**

Subject Code & Name : ME8501 & Metrology and Measurements

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO303.1            | Discuss the measurement systems, units and dimensions, calibration and correction.                             | K2                      |
| CO303.2            | Explain the various linear and angular measurement systems and understand the concept of interchangeability    | K2                      |
| CO303.3            | Describe the working principle of auto collimator, CMM and list the applications of them.                      | K2                      |
| CO303.4            | Explain the various form measurements like thread, gear, straightness, flatness, roundness and surface finish. | K2                      |
| CO303.5            | Discuss the working of miscellaneous measuring equipment for measuring temperature, velocity, pressure.        | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO303.1    | K2          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 2     | 0     | 2     | 2                         | 0     | 1     |
| CO303.2    | K2          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 2     | 0     | 2     | 0                         | 0     | 0     |
| CO303.3    | K2          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 0     | 0     | 2     | 2                         | 3     | 0     |
| CO303.4    | K2          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 0     | 0     | 2     | 0                         | 2     | 1     |
| CO303.5    | K2          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 1     | 0     | 2     | 2                         | 2     | 1     |
|            |             |                  |      |      |      |          |      |      |      |      |       |       |       |                           |       |       |

4

**Course Outcome No.304**

Subject Code & Name: ME8594 & Dynamics of Machines

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO304.1            | Evaluate static and dynamic forces of mechanisms.   | K5                      |
| CO304.2            | Evaluate the balancing masses and their locations of reciprocating and rotating masses.                             | K5                      |
| CO304.3            | Examine the frequency of free vibration.  | K4                      |
| CO304.4            | Examine the frequency of forced vibration and damping coefficient.  | K4                      |
| CO304.5            | Evaluate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes. | K5                      |
|                    |   |                         |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO304.1    | K5          | 2                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO304.2    | K5          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO304.3    | K4          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO304.4    | K4          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO304.5    | K5          | 3                | 2    | 3    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
|            |             |                  |      |      |      |          |      |      |      |      |       |       |       |                           |       |       |

5

**Course Outcome No.305**

Subject Code & Name : OAT552 & Internal Combustion Engines

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO305.1            | Explain the design and operating parameters of an engine and analyze thermodynamic concepts of fuel- air cycles.  | K3                      |
| CO305.2            | Summarize the concepts of petrol engine fuel injection, ignition and different stages of combustion in SI engines | K4                      |
| CO305.3            | Explain the concepts of Diesel engine fuel injection, ignition and different stages of combustion in CI engines   | K3                      |
| CO305.4            | Analyze different cooling and lubrication systems used in IC engines  | K3                      |
| CO305.5            | Explain the construction and working concepts of modern technologies in IC engines.                               | K3                      |
|                    |   |                         |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO305.1    | K3          | 3                | ---- | ---- | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO305.2    | K4          | 3                | 3    | ---- | 2    | ----     | 3    | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO305.3    | K3          | 3                | 3    | ---- | 1    | ----     | 3    | 2    | ---- | ---- | ----  | ----  | ----  | 2                         | ----  | ----  |
| CO305.4    | K3          | 3                | ---- | ---- | ---- | ----     | 3    | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | ----  |
| CO305.5    | K3          | 3                | ---- | ---- | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | ----  |
|            |             |                  |      |      |      |          |      |      |      |      |       |       |       |                           |       |       |

**Course Outcome No.306**

Subject Code & Name :ME8511 & Kinematics and Dynamics Laboratory

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO306.1            | Explain gear parameters, velocity ratios of simple, compound, Epicyclic and differential gear trains.                                      | K2                      |
| CO306.2            | Explain Kinematics of Four Bar, Slider Crank, Crank Rocker, Double crank, Double rocker, Oscillating cylinder Mechanisms.                  | K2                      |
| CO306.3            | Illustrate Cam profile drawing, Motion curves and study of jump phenomenon   | K2                      |
| CO306.4            | Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient.  | K5                      |
| CO306.5            | Determine torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio. | K5                      |
| CO306.6            | Exhibit ethical principles in engineering practices  | A3                      |
| CO306.7            | Perform task as an individual and / or team member to manage the task in time  | A3                      |
| CO306.8            | Express the Engineering activities with effective presentation and report.   | A3                      |
| CO306.9            | Interpret the findings with appropriate technological / research citation.   | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A2    | PSO-1 | PSO-2                     | PSO-3 |       |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |       |                           |       | PO-12 |
| CO306.1    | K2          | 2                | 2    | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO306.2    | K2          | 2                | 2    | ---- | 2    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO306.3    | K2          | 2                | 2    | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO306.4    | K5          | 2                | 2    | ---- | 2    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO306.5    | K5          | 2                | 2    | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO306.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | ----  |
| CO306.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | ----  |
| CO306.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | ----  |
| CO306.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | ----  |

**Course Outcome No.307**

Subject Code & Name : ME8512 & Thermal Engineering Laboratory

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO307.1            | Construct the valve timing and port timing diagrams.  | K5                      |
| CO307.2            | Generate actual p – v diagram for an internal combustion engine.  | K3                      |
| CO307.3            | Analyze various performance parameters and sketch performance curves for an internal combustion engine. | K5                      |
| CO307.4            | Estimate various losses in an internal combustion engine and prepare heat balance sheet.                | K5                      |
| CO307.5            | Identify flash and fire points of oils and lubricants.  | K3                      |
| CO307.6            | Analyze various performance parameters of steam generators and turbines.                                | K3                      |
| CO307.7            | Predict the heat transfer coefficient for various engineering applications                              | K3                      |
| CO307.8            | Analyze the performance of heat exchangers  | K3                      |
| CO307.9            | Apply the principles of vapour compression cycle in refrigerators and air conditioning systems.         | K3                      |
| CO307.6            | Exhibit ethical principles in engineering practices   | A3                      |
| CO307.7            | Perform task as an individual and / or team member to manage the task in time                           | A3                      |
| CO307.8            | Express the Engineering activities with effective presentation and report.                              | A3                      |
| CO307.9            | Interpret the findings with appropriate technological / research citation.                              | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |      |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |      |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |      |
| CO307.1    | K5          | 3                | ---- | ---- | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | ----  | ---- |
| CO307.2    | K3          | ----             | ---- | ---- | 2    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | ----  | ---- |
| CO307.3    | K5          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO307.4    | K5          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO307.5    | K3          | 3                | ---- | ---- | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | ----  | ----  | ---- |
| CO307.6    | K3          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 2     | ----  | ---- |
| CO307.7    | K3          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO307.8    | K3          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO307.9    | K3          | ----             | ---- | ---- | 3    | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | ----                      | 3     | ----  | ---- |
| CO307.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     | ---- |
| CO307.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     | ---- |
| CO307.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     | ---- |
| CO307.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     | ---- |

**Course Outcome No.308**

Subject Code & Name : ME8513 & Metrology and Measurements Laboratory

Department: MECH

Year/Sem: III/05

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO308.1            | Check the dimensions and the dimensional deviations of given parts.  | K3                      |
| CO308.2            | Inspect the dimensions, angularity and parallelism of a given component.   | K3                      |
| CO308.3            | Construct the torque characteristic curves to various loads at various distances.  | K4                      |
| CO308.4            | Evaluate the straightness of surfaces and determine size of irregularities on a machined surface.  | K4                      |
| CO308.5            | Measure the vertical distances or height of objects, taper angle of slope for a given component, various parameters of threads and gear wheel. | K4                      |
| CO308.6            | Exhibit ethical principles in engineering practices  | A3                      |
| CO308.7            | Perform task as an individual and / or team member to manage the task in time  | A3                      |
| CO308.8            | Express the Engineering activities with effective presentation and report.   | A3                      |
| CO308.9            | Interpret the findings with appropriate technological / research citation.   | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO308.1    | K3          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 2     | 0     | 2     | 2                         | 0     | -     |
| CO308.2    | K3          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 2     | 0     | 2     | 0                         | 0     | -     |
| CO308.3    | K4          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 1     | 0     | 2     | 2                         | 2     | -     |
| CO308.4    | K4          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 0     | 0     | 2     | 0                         | 2     | -     |
| CO308.5    | K4          | 3                | 3    | 3    | 2    | 0        | 2    | 0    | 0    | 0    | 0     | 0     | 2     | 0                         | 2     | -     |
| CO308.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO308.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO308.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |
| CO308.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |



**SEMESTER 6**

**Course Outcome No.309**

Subject Code & Name : ME8651 & Design of Transmission Systems

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO309.1            | apply the concepts of design to belts, chains and rope drives. | K3                      |
| CO309.2            | apply the concepts of design to spur, helical gears.           | K3                      |
| CO309.3            | apply the concepts of design to worm and bevel gears.          | K3                      |
| CO309.4            | apply the concepts of design to gear boxes .                   | K3                      |
| CO309.5            | apply the concepts of design to cams, brakes and clutches      | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |
| CO309.1    | K3          | -                | 2    | 3    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO309.2    | K3          | -                | 2    | 3    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO309.3    | K3          | -                | 2    | 3    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO309.4    | K3          | -                | 2    | 3    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO309.5    | K3          | -                | 2    | 3    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |

2

**Course Outcome No.310**

Subject Code & Name : ME8691 & Computer Aided Design and Manufacturing

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO310.1            | Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics | K2                      |
| CO310.2            | Explain the fundamentals of parametric curves, surfaces and Solids                          | K2                      |
| CO310.3            | Summarize the different types of Standard systems used in CAD                               | K2                      |
| CO310.4            | Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines  | K3                      |
| CO310.5            | Summarize the different types of techniques used in Cellular Manufacturing and FMS          | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |   |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|---|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |   |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |   |
| CO310.1    | K2          | 2                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO310.2    | K2          | 2                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO310.3    | K2          | 2                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO310.4    | K3          | 2                | 3    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |
| CO310.5    | K2          | 2                | -    | -    | -    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | 2     | - |

3

**Course Outcome No.311**

Subject Code & Name : ME8693 & Heat and Mass Transfer

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO311.1            | Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems                        | K3                      |
| CO311.2            | Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems | K3                      |
| CO311.3            | Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and | K3                      |
| CO311.4            | Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems              | K3                      |
| CO311.5            | Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications                                      | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO311.1    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO311.2    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO311.3    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO311.4    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO311.5    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |

**Course Outcome No.312**

Subject Code & Name : ME8692 & Finite Element Analysis

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO312.1            | Summarize the basics of finite element formulation.   | K2                      |
| CO312.2            | Apply finite element formulations to solve one dimensional Problems                           | K3                      |
| CO312.3            | Apply finite element formulations to solve two dimensional scalar Problems.                   | K3                      |
| CO312.4            | Apply finite element method to solve two dimensional Vector problems.                         | K3                      |
| CO312.5            | Apply finite element method to solve problems on iso parametric element and dynamic Problems. | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO312.1    | K2          | 2                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO312.2    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO312.3    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO312.4    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |
| CO312.5    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  |       |

5

**Course Outcome No.313**

Subject Code & Name : ME8694 & Hydraulics and Pneumatics

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO313.1            | Explain the Fluid power and operation of different types of pumps.                                  | K2                      |
| CO313.2            | Summarize the features and functions of Hydraulic motors, actuators and Flow control valves         | K2                      |
| CO313.3            | Explain the different types of Hydraulic circuits and systems                                       | K3                      |
| CO313.4            | Explain the working of different pneumatic circuits and systems                                     | K4                      |
| CO313.5            | Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems. | K3                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO313.1    | K2          | 3                | 2    | 1    | 2    | 2        | 1    | 1    | 2    | 2    | 2     | 2     | 3     | 3                         | 2     | 1     |
| CO313.2    | K2          | 2                | 2    | 1    | 2    | 1        | 1    | 1    | 1    | 2    | 1     | 1     | 3     | 2                         | 1     | 1     |
| CO313.3    | K3          | 3                | 2    | 1    | 1    | 1        | 1    | 1    | 1    | 2    | 1     | 1     | 3     | 2                         | 2     | 2     |
| CO313.4    | K4          | 3                | 2    | 2    | 1    | 1        | 1    | 1    | 1    | 2    | 2     | 2     | 2     | 3                         | 1     | 2     |
| CO313.5    | K3          | 2                | 2    | 1    | 1    | 1        | 1    | 1    | 2    | 3    | 2     | 1     | 2     | 2                         | 1     | 3     |

**Course Outcome No.314**

Subject Code & Name : ME8091 & Automobile Engineering

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO314.1            | recognize the various parts of the automobile and their functions and materials. | K2                      |
| CO314.2            | discuss the engine auxiliary systems and engine emission control.                | K2                      |
| CO314.3            | distinguish the working of different types of transmission systems.              | K2                      |
| CO314.4            | explain the Steering, Brakes and Suspension Systems.                             | K2                      |
| CO314.5            | predict possible alternate sources of energy for IC Engines.                     | K2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO314.1    | K2          | 1                | 2    | -    | -    | -        | 1    | -    | -    | -    | -     | 1     | -     | -                         | 2     | -     |
| CO314.2    | K2          | 1                | 2    | -    | -    | -        | 1    | -    | -    | -    | -     | 1     | -     | -                         | 2     | -     |
| CO314.3    | K2          | 1                | 2    | -    | -    | -        | 1    | -    | -    | -    | -     | 1     | -     | -                         | 2     | -     |
| CO314.4    | K2          | 1                | 2    | -    | -    | -        | 1    | -    | -    | -    | -     | 1     | -     | -                         | 2     | -     |
| CO314.5    | K2          | 1                | 2    | -    | -    | -        | 1    | -    | -    | -    | -     | 1     | -     | -                         | 2     | -     |

**Course Outcome No.315**

Subject Code & Name : ME8681 & CAD/CAM Laboratory

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome   | Highest Cognitive Level |
|--------------------|--|-------------------------|
| CO315.1            | Follow the drawing standards, Fits and tolerance.                                | K3                      |
| CO315.2            | Re-create part drawing, Sectional views and assembly drawing as per the standard | K3                      |
| CO315.3            | Exhibit ethical principles in engineering practices                              | A3                      |
| CO315.4            | Perform task as an individual and / or team member to manage the task in time    | A3                      |
| CO315.5            | Express the Engineering activities with effective presentation and report.       | A3                      |
| CO315.6            | Interpret the findings with appropriate technological / research citation.       | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO315.1    | K3          | 1                | 2    | 3    | -    | 3        | -    | -    | 3    | -    | -     | -     | -     | -                         | 2     | -     |
| CO315.2    | K3          | 1                | 2    | 3    | -    | 3        | -    | -    | 3    | -    | -     | -     | -     | -                         | 2     | -     |
| CO315.3    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO315.4    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO315.5    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |
| CO315.6    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |

**Course Outcome No.316**

Subject Code & Name : ME8682 & Design and Fabrication Project

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO316.1            | Design and Fabricate the machine element or the mechanical product.             | K3                      |
| CO316.2            | Demonstrate the working model of the machine element or the mechanical product. | K3                      |
| CO316.6            | Exhibit ethical principles in engineering practices                             | A3                      |
| CO316.7            | Perform task as an individual and / or team member to manage the task in time   | A3                      |
| CO316.8            | Express the Engineering activities with effective presentation and report.      | A3                      |
| CO316.9            | Interpret the findings with appropriate technological / research citation.      | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO316.1    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO316.2    | K3          | 3                | 2    | 2    | ---- | ----     | ---- | ---- | ---- | ---- | ----  | ----  | ----  | 3                         | ----  | ----  |
| CO316.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO316.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO316.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |
| CO316.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 3     | -     | -     | -                         | -     | -     |

**Course Outcome No.317**

Subject Code & Name : HS8581 & Professional Communication

Department: MECH

Year/Sem: III/06

After successful completion of the course, the students should be able to

| Course Outcome No. | Course Outcome  | Highest Cognitive Level |
|--------------------|---|-------------------------|
| CO317.1            | Summarize various skills such as Soft Skills, Hard skills, employability and career Skills  | K2                      |
| CO317.2            | Involve oneself before the audience by doing effective presentations on introducing oneself, answering questions and visual presentations.        | K2                      |
| CO317.3            | Demonstrate oneself by participating in group discussions, brainstorming sessions and question sessions. Develop activities to improve GD Skills. | K2                      |
| CO317.4            | Fosters interview skills so as to be successful in them.  | K2                      |
| CO317.5            | Promotes adequate Soft Skills required for the workplace and long-term career.  | K2                      |
| CO317.6            | Exhibit ethical principles in engineering practices   | A3                      |
| CO317.7            | Perform task as an individual and / or team member to manage the task in time   | A3                      |
| CO317.8            | Express the Engineering activities with effective presentation and report.  | A3                      |
| CO317.9            | Interpret the findings with appropriate technological / research citation.  | A2                      |

**CO & PO and PSO Mapping**

| Course No. | Level of CO | Program Outcomes |      |      |      |          |      |      |      |      |       |       |       | Program Specific Outcomes |       |       |
|------------|-------------|------------------|------|------|------|----------|------|------|------|------|-------|-------|-------|---------------------------|-------|-------|
|            |             | K3               | K4   | K4   | K5   | K3,K5,K6 | A3   | A2   | A3   | A3   | A3    | A3    | A2    | PSO-1                     | PSO-2 | PSO-3 |
|            |             | PO-1             | PO-2 | PO-3 | PO-4 | PO-5     | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 | PO-12 |                           |       |       |
| CO317.1    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | 1     |
| CO317.2    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | 0     |
| CO317.3    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | 1     |
| CO317.4    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | 1     |
| CO317.5    | K2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | 5     | -     | -     | -                         | -     | 1     |
| CO317.6    | A3          | 2                | 2    | 2    | 2    | -        | -    | -    | -    | -    | -     | -     | -     | -                         | -     | -     |
| CO317.7    | A3          | -                | -    | -    | -    | -        | -    | -    | 3    | -    | -     | -     | -     | -                         | -     | -     |
| CO317.8    | A3          | -                | -    | -    | -    | -        | -    | -    | -    | 3    | -     | 3     | -     | -                         | -     | -     |
| CO317.9    | A2          | -                | -    | -    | -    | -        | -    | -    | -    | -    | -     | 3     | -     | -                         | -     | -     |