SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING, SHEGAON

DEPARTMENT OF MECHANICAL ENGINEERING

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COURSE OUTCOMES OF ALL COURSES OF FOURTH SEMESTER

BE MECHANICAL ENGINEERING

**4ME01 Material Science**

After successfully completing the course, students will be able to:

1. Illustrate the basic concepts of metallurgy and materials classification in details.
2. Illustrate the Iron-Carbon Equilibrium Diagram of metal materials and application of composites
3. Understand different alloying elements and their effects on properties of steels and different types of alloys and their application
4. Classify different types of cast iron, non-ferrous metal and alloys and their use, properties and applications
5. Explain various principles of heat treatment used in metallurgy
6. Explain various heat treatment processes, powder metallurgy and their industrial applications.

**4ME02 Energy Conversion - I**

After successfully completing the course, students will be able to:

1. Explain the different types of boiler and its mounting and accessories.
2. Analyze the performance of boiler and Chimney.
3. Analyze the performance of condensers.
4. Analyze the performance of steam turbines.
5. Classify different types of the nuclear reactor.
6. Illustrate various renewable energy sources for power generations.

**4ME03 Manufacturing Technology**

After successfully completing the course, students will be able to:

1. Apply the concept of mechanics of metal cutting for various machining processes.
2. Analyze the process parameters for given Lathe operations.
3. Apply the knowledge of drilling, boring and broaching process to solve the related problems.
4. Apply the knowledge of milling and gear manufacturing process to solve the related problems.
5. Apply the concept of grinding process for finishing operations.
6. Identify the various unconventional machining processes.

**4ME04 Basic Electrical Drives and Control**

After successfully completing the course, students will be able to:

1. Explain electric drives and power electronics, including motor heating and cooling.
2. Analyze characteristics of DC and special motors like servo, stepper, and brushless DC
3. Evaluate principles and types of AC motors including single and three-phase induction motors.
4. Apply speed control techniques for AC and DC motors using thyristorized methods.
5. Identify and describe sensors and transducers in mechatronic systems.
6. Select suitable electric drives for various industrial applications.

**4ME05 Hydraulic and Pneumatic Systems**

After successfully completing the course, students will be able to:

1. Analyze different turbines for engineering applications
2. Compare the pumping systems and examine their performance characteristics
3. Identify various principles of compressible fluid flow.
4. Classify different types of hydraulic systems