Department of Mechanical Engineering

Course Outcomes [CO'S]

CLASS: FOURTH YEAR

SUBJECT/CODE: REFRIGERATION AND AIR CONDITIONING [402041]

1. Illustrate the fundamental principles and applications of refrigeration and air conditioning System.
2. Obtain cooling capacity and coefficient of performance by conducting test on vapor compression
   Refrigeration systems.
3. Present the properties, applications and environmental issues of different refrigerants.
4. Calculate cooling load for air conditioning systems used for various applications
5. Operate and analyze the refrigeration and air conditioning systems.

SUBJECT/CODE: CAD/CAM AND AUTOMATION [402042]

1. Analyze and design real world components
2. Suggest whether the given solid is safe for the load applied.
3. Select suitable manufacturing method for complex components.

SUBJECT/CODE: DYNAMICS OF MACHINERY [402043]

1. Ability to understand the fundamentals of vibration and noise.
2. Ability to develop analytical competency in solving vibration problems.
3. Ability to understand measurement and control of vibration and noise.
4. Ability to calculate natural frequencies, eigen values & eigen vectors.
5. Ability to measure vibrations, vibration characteristics and understand various methods for Vibration control for real life problem.

SUBJECT/CODE: ENERGY AUDIT AND MANAGEMENT (ELECTIVE I) [402044A]

1. Carry out energy audit of their residence / society / college where they are studying.

2. Carry out electrical tariff calculation and accurately predict the electricity bill required for the installation.
3. Suggest various methods to reduce energy consumption of the equipment / office / premises.

SUBJECT/CODE: OPERATION RESEARCH (ELECTIVE II) [402045C]

1. Illustrate the need to optimally utilize the resources in various types of industries.
2. Apply and analyze mathematical optimization functions to various applications.
3. Demonstrate cost effective strategies in various applications in industry.

SUBJECT/CODE: ADVANCED MANUFACTURING PROCESSES (ELECTIVE II) [402045D]

1. Selection of appropriate manufacturing process for advance components.
2. Characterization of work pieces.

SUBJECT/CODE: POWER PLANT ENGINEERING [402047]

1. Ability to have adequacy with design, erection and development of energy conversion plants.
2. Optimization of energy conversion plant with respect to the available resources.
3. Scope of alternative erection of optimized, suitable plant at the location depending upon geographical conditions.

SUBJECT/CODE: MECHANICAL SYSTEM DESIGN [402048]

1. The student will understand the difference between component level design and system level design.
2. Ability to design various mechanical systems like pressure vessels, machine tool gear boxes, material handling systems, etc. for the specifications stated/formulated.
3. Ability to learn optimum design principles and apply it to mechanical components.
4. Ability to handle system level projects from concept to product.

SUBJECT/CODE: INDUSTRIAL ENGINEERING (ELECTIVE III) [402049C]

1. Apply the industrial engineering concept in the industrial environment.

2. Manage and implement different concepts involved in methods study and understanding of work content in different situations.

3. Undertake project work based on the course content.

4. Describe different aspects of work system design and facilities design pertinent to manufacturing industries.

5. Identify various cost accounting and financial management practices widely applied in industries.

6. Develop capability in integrating knowledge of design along with other aspects of value addition in the conceptualization and manufacturing stage of various products.

SUBJECT/CODE: FINITE ELEMENT ANALYSIS (ELECTIVE IV) [402050B]

1. Derive and use 1-d and 2-d element stiffness matrices and load vectors from various methods to solve for displacements and stresses.

2. Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasonableness of finite element results.

3. Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis.

4. Interpret the results of finite element analyses and make an assessment of the results in terms of modeling (physics assumptions) errors, discretization (mesh density and refinement toward convergence) errors, and numerical (round-off) errors.