PROJECT I

ENME 416

Credit: 2 **Year : IV** **Part : I**

Course Objectives:

Project I focuses on the systematic identification, conceptual design and planning of mechanical engineering problem. Students learn to apply research methods to implement mechanical engineering design project. The objective is to develop a technically sound proposal that addresses issues such as design optimization, system performance or structural safety within the within the core disciplines of mechanical engineering. Students will implement a structured methodology to develop a detailed engineering design.

General Procedures:

i. **Problem Identification and Proposal (1-4 weeks):** Students are organized into collaborative groups (Generally four members in a group). Groups identify a specific organizational or production challenge, such as productivity bottlenecks, system inefficiencies or quality management issues and prepare a preliminary proposal with topics covered throughout the curriculum and prepare a proposal. Students can also get help from available faculty members for project ideas.

ii. **Proposal Presentation and Supervision:** The proposal should contain a review of existing research and industrial standards are conducted to justify the study and identify specific technical gaps that the project aims to bridge. After the successful project proposal presentation, project committee formed by department will assign a faculty supervisor for each group. The supervisor provides technical guidance based on the group's selected mechanical engineering focus area.

iii. **Methodology and Technical Design (5-12 weeks):** Groups define a systematic engineering approach, detailing the specific data collection techniques, analytical frameworks and modeling tools required for the project. Depending on the project's scope, students execute conceptual designs, mathematical modeling, computer modeling/simulations or preliminary fabrication to prove the technical viability of their proposed solution.

iv. **Mid-Term Defense and Evaluation:** The semester concludes with a formal presentation. Students must defend their methodology and design components, demonstrating that the project is well-planned and technically sound. Successful completion and validation of the planning phase are mandatory prerequisites before students can proceed to the implementation phase in Project II. The exact date for

mid-term defense is determined by the project committee and generally occurs one or two weeks before the end of semester.

Throughout the course, the faculty will serve as a supervisor, providing continuous feedback and conducting regular reviews to ensure that technical viability and professional documentation standards are maintained.

Evaluation Scheme:

Evaluation methods	Descriptions	Marks
Continuous Technical Assessments	Evaluation of the detailed literature review, problem formulation and weekly progress log submitted to the supervisor. Assessment focuses on the student's ability to identify research gaps or local industrial challenges and the logical transition from theoretical concepts to technical model setup.	10
Technical Project Documentation	Assessment of the literature survey depth and the technical accuracy of the proposed engineering plan. This includes the selection of appropriate analytical tools, data collection methods or simulation frameworks that are to be evaluated by project committee.	15
Oral Defense and Presentation	A formal oral defense and presentation with report submission. Focus is on the group's ability to justify project feasibility, defend the engineering approach and prove that the plan is technically ready for the implementation phase in Project II.	25
Total		**50**