**College Of Engineering**

**Mechanical Engineering Department**

**COURSE DESCRIPTION : Course 514ME-3**

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| 1. **Course Number** | 514ME-3 | **Course Name** | GRADUATION PROJECT | |
| 1. **Credit hours** | 3 | **Contact hours** | 3 per week | |
| **Level / Year** | **9th level / 5th Year** | | | |
| 1. **Course Instructor** |  | | | |
| 1. **Textbook, title, author, and year** | Textbook:  **It is indicated according to the specialization field which will be chosen for the project.** | | | |
| 1. **Specific course information** | 1. **Brief description of the content of the course (catalog description)**   The graduation project is a project chosen by the student in the final year (in the ninth level). Students start to collect theoretical and practical information about the subject of the project and perform experimental tests or develop a mathematical model and verify it by using a computer simulation. The project work is to be completed within two semesters. Finally, the students prepare a final report, present, and defend it in front of the Committee of project discussion. | | | |
| **b. Prerequisites** | Passing 125 hours of Plan hours | | | |
| **Co-requisites** | Nil | | | |
| **c. Required, Elective, or Selected elective** | Required | **Language of instruction** | | English |
| **Hardware/software usage** | | It depends of the graduation Project Title and content. |

L Lecture; T Tutorial; P Practical

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| 1. **Specific goals for the course** | 1. **Specific outcomes of instruction**   *By the completion of the course the student should be able to:*  CLO 1. Understanding the basic science and mathematics, rules and steps of design, planning, and implementation of the engineering projects  . **[a1]**  CLO2. Identifying the problem and formulating the problem to arrive at the solution of the engineering problem **[b1]**  CLO3. Design and conduct experiments, as well as operate, document analyze and interpret the output **[b2]**  CLO4. Design a system, component, or process considering realistic constraints exploring various design strategies and applying engineering/scientific concepts.  **[b3]**  **(ABET SO) [NCAAA PLO]** | |
| 1. **Course Learning Outcomes (Mapped with Student Outcome of Criteria 3)**   **[a1]** Knowledge the basic science and mathematics formulation, rules and steps of design, etc..  **[b1]** Knowledge and explaining the mathematics, science and engineering principles in design and development of models...  **[b3]** Knowledge and Design a system, considering realistic constraints exploring various strategies and using engineering methods of calculations  **[b4]** Knowledge and Identifying, formulating, and finding various solution strategies by using different resources  **(ABET SO) [NCAAA PLO]** | |
| 1. **Brief list of topics to be covered** | 1. Collecting of required information (theoretical and experimental) for the project 2. Discussions within team and supervisors and expert committees   to ensure that the engineering projects structure should include a project  management approach, development of customer/client requirements and  realistic constraints, generation of alternative solutions, evaluating  alternatives against requirements, considering risks, and making trade-offs for  the purpose of obtaining a high quality design under given constraints.   1. Conducting pilot experiments, implementing the mathematical and/or the computational models and doing sample simulations 2. Understanding the feasibility and procuring/outsourcing required items required for the project 3. Presenting the first phase of the project in front of an examination committee (FIRST SEMINAR). 4. Collecting of critical information (theoretical and experimental) for the project 5. Conducting experiments, running and implementing the mathematical and/or the computational models (Alternatives solutions, errors analysis) 6. Analysis of the results and writing a complete final report as per the standard format 7. Presenting the project and defending it in front of an examination committee. | |
| 1. **Any other information** | **Course Assessment** | |
|  | |  | | --- | | **Activity** | | First Seminar | | Semester work (Supervisor) | | Final Seminar | | Total | |  | |  | | |  | | --- | | **Assessment% (Marks)** | | 10% (10 Marks) | | 50% (50 Marks) | | 40% (40 Marks) | | 100% (100 Marks) | |  | |  | |