**DESIGN PROJECT PROPOSAL FORM**

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| **Academic Year** | **2024 - 2025** | **Semester** | | Fall 🗷 Spring |
| **Project Type** | **Research** | | **Application** | |
| ME 411 Thermal & Fluid Design | | ME 412 Thermal & Fluid Design | |
| ME 413 Mechanical Design | | 🗷 ME 414 Mechanical Design | |
| ME 415 Robotics & Control Design | | ME 416 Robotics & Control Design | |
| **Advisor** | Prof. Dr. Mehmet Çevik | | | |

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| **Project Title** | Design and Fabrication of a Drone |
| **Purpose and Scope** | This project challenges students to design, build, and test a functional drone within a weight limit of 500 grams and controlled via an Arduino-based system. The project will cover the fundamental aspects of drone technology, including aerodynamics, propulsion systems, structural design, and control systems. Students will work through the complete design process, from conceptualization to prototyping, considering factors like stability, payload capacity, and flight performance. They will also gain experience in the manufacturing process, selecting appropriate materials and fabrication methods to construct a durable, efficient drone. By the end of the project, they will have a hands-on understanding of both the technical and practical aspects of drone engineering, preparing them for further work in UAV technology and applications in fields such as surveying, surveillance, and delivery. |
| **Work Packages** | * Make a literature review about drones * Determine design steps * Purchase necessary materials * Prepare a Solidworks model * Manufacture the drone and test it * Prepare the project report. |
| **# of Team Members** | 4 |
| **This section will be filled by the Commission** | The Project Proposal   * fulfills the regulations of the Department * should be revised according to the following suggestions: |

The projects are aimed to prepare students to attain the following program educational objectives:

(a) an ability to apply knowledge of mathematics, science, and engineering

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Therefore, the final report of the project should contain the followings:

1. Definition of the design problem and its limitations
2. Theoretical information about the topic, standards and patents
3. Different design options and selection criteria
4. Optimal solution with appropriate selection criteria
5. Cost accounting, feasibility, compliance with regulations and standards, environmental impacts, and compliance with ethical rules
6. Engineering drawing and presentation methods for presenting