**DESIGN PROJECT PROPOSAL FORM**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

|  |  |
| --- | --- |
| **Project Title** | Automation of Hydraulic Jack System in a Heated Plastic Press Machine |
| **Purpose and Scope** | This project involves automating the hydraulic jack system of an existing heated plastic press machine in collaboration with a small-sized enterprise. The current system operates manually, and the objective is to convert it into an automated process using the existing hydraulic jack. The automation will enable the system to increase the pressure level every 10 minutes, accommodating the melting of the plastic material during the pressing process. By working closely with the enterprise, the student will gain insights into the company’s operational needs and ensure the solution aligns with their requirements. This enhancement aims to improve process efficiency, reduce operator intervention, and maintain consistent product quality.C:\Users\Acer P256\Desktop\kriko2.jpg |
| **Work Packages** | * Collaborate with the company to observe the current manual process and understand the system’s functionality.
* Conduct a literature review on automated hydraulic systems and their applications in similar machinery
* Define the automation requirements
* Designing and modeling the automation system
* Integrate the automation system with the existing press machine
* Test and refine the system
* Prepare the project report.
 |
| **# of Team Members** | 2 |
| **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