**Graduation Project Proposal**

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| Project Title | Numerical Investigation of Parallel and Counter Flow Heat Exchangers by using Computational Fluid Dynamics (CFD) |
| Classification | Research project |
| Supervisor | Dr. Gökhan CANBOLAT |
| Abstract | Numerical investigation of a heat exchangers by using Computational Fluid Dynamics (CFD) is highly used in engineering applications. This project aims to learn the introduction to CFD, construction a numerical model, generation of mesh, determination of boundary conditions, and post-process. Parallel and Counter Type Heat Exchangers type of heat exhager will be examined under laminar and turbulent flow conditions.Variation of heat transfer coefficient (h), Nusselt (Nu), and temperature distributions will be presentedin the study. A manuscript will be prepared to report the outcomes of the project. |

The graduation project is the subject of the MEC 401 Mechanical Engineering Design and MEC 402 Graduation Project courses offered in the 7th and 8th semesters, respectively.

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| Course Name | MEC 401 Mechanical Engineering Design |
| Prerequisites | MEC 204 Fluid Mechanics I, MEC 303 II Fluid Mechanics I, MEC 302 Heat Transfer |
| Corequisites | None |
| Requirements | Basic knowledge of a finite element analysis package |
| Workflow | * Literature survey * Problem Defination, Boundary Conditions * Midterm presentation * Construction of the numerical model and Mesh * Numerical analysis * Comparison of the models * Project report * Final presentation |

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| Course Name | MEC 402 Graduation Project |
| Prerequisites | MEC 401 Mechanical Engineering Design |
| Corequisites | MEC 204 Fluid Mechanics I, MEC 303 II, MEC 302 Heat Transfer |
| Requirements | None |
| Workflow | * Numerical studies * Comparison of results * Midterm presentation * Project report * Final presentation |

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| Term | 2024-2025 Fall Semester | | |
| Date |  | | |
| Project Title | Numerical Investigation of Parallel and Counter Flow Heat Exchangers by using Computational Fluid Dynamics (CFD) | | |
| Supervisor Name and Signature | Dr. Gökhan CANBOLAT | | |
| Students | | | |
| First Name | Last Name | Student Number | Signature |
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