**Graduation Project Proposal**

|  |  |
| --- | --- |
| Project Title | Structural analysis of a sandwich beam |
| Classification | Research project |
| Supervisor | Sefa YILDIRIM |
| Abstract | Beam-like elements are present in all types of structures which can be observed in day-to-day life. Beams are structural elements subjected to lateral (to their axis) loading in the form of forces or moments resulting them to experience tension, compression, bending and torsion. The aim of the project is to investigate the static response of sandwich beam under different loading and boundary conditions using finite-element software package. The beam may be symmetric or unsymmetric and the core material is graded functionally through the thickness. |

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.

|  |  |
| --- | --- |
| Course Name | MEC 401 Mechanical Engineering Design |
| Prerequisites | MEC 201 Strength of Materials I |
| Corequisites | SEC 301.2 Computer Aided Structural Analysis |
| Requirements | Basic knowledge of a finite element analysis package |
| Workflow | * Literature survey * Designing the beam geometry * Analytical solution of case study: cantilever isotropic beam example * Validation of the sandwich finite element model using case study * Emulation of the functionally-graded core * Analysis of the cantilever sandwich beam under point load * Project report * Final presentation |

|  |  |
| --- | --- |
| Course Name | MEC 402 Graduation Project |
| Prerequisites | MEC 401 Mechanical Engineering Design |
| Corequisites | SEC 301.2 Computer Aided Structural Analysis |
| Requirements | Basic knowledge of a finite element analysis package |
| Workflow | * Analysis of the sandwich beam under different loading and boundary conditions * Variation of the functionally-graded core material and model * Comments on the results * Project report * Final presentation |

|  |  |  |  |
| --- | --- | --- | --- |
| Term |  | | |
| Date |  | | |
| Project Title |  | | |
| Supervisor Name and Signature |  | | |
| Students | | | |
| First Name | Last Name | Student Number | Signature |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |