**Multidisciplinary Graduation Project Proposal**

MCE 401 Graduation Project I

MCE 402 Graduation Project II

EEE 401 Electrical Engineering Design

EEE 402 Graduation Thesis

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| Project Title | Fiber Bragg Grating Sensors and Their Applications for Structural Health Monitoring |
| Classification | Research project |
| Supervisor | Fatih DARICIK, Mechanical Eng. / Fikri Serdar GÖKHAN, Electrical & Electronics Eng. |
| Abstract | Fiber reinforced polymer composite materials have been preferred for structural parts in many industrial applications. Their complex failure modes and difficulty of maintenance have accelerated the research activities on advanced monitoring technologies. Structural Health Monitoring (SHM) is an emerging technology to monitor the condition of the structure continuously, detect damages in advance and prevent failure before occurring. Fiber Bragg Grating (FBG) strain sensors have become appealing for the SHM of composite structures. The objective of the thesis is to research and demonstrate the feasibility of FBG sensors for SHM of composite structures by performing static tests of composite beams instrumented with embedded and surface bonded FBG sensors and comparing the results of tests with Finite Element Analyses (FEA) to observe the agreement between them. |

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| Course Name | MCE 401 Graduation Project I, EEE 401 Electrical Engineering Design |
| Prerequisites | SEC 304.4 / Mechanics of Fiber-Reinforced Composites |
| Corequisites | None |
| Requirements | Basic knowledge of a finite element analysis package and composite materials |
| Workflow | * Literature survey * Design of composites and their tests * Construction of the numerical models * Computational analysis * Comparison of the computational results and literature * Project report * Final presentation |

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| Course Name | MCE 402 Graduation Project II, EEE 402 Graduation Thesis |
| Prerequisites | MCE 401 Graduation Project I, EEE 401 Electrical Engineering Design |
| Corequisites | SEC 304.4 / Mechanics of Fiber-Reinforced Composites |
| Requirements | None |
| Workflow | * Experimental studies * Comments on the results * Midterm presentation * Project report * Final presentation |

**Multidisciplinary Graduation Project Application Form**

MCE 401 Graduation Project I

MCE 402 Graduation Project II

EEE 401 Electrical Engineering Design

EEE 402 Graduation Thesis

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| Term |  |
| Date |  |
| Project Title |  |

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