

OSTİM TECHNICAL UNIVERSITY

**ELECTRICAL-ELECTRONIC ENGINEERING DEPARTMENT**

**GRADUATION PROJECT PROPOSAL FORM**

**2024-2025 SEMESTER**

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| **Lecture Code: EEE400/411** | **Lecture Name: Graduation Project** |
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| **Project Title / Number of Students:** | BLDC Motor drive design and application for electric vehicles (Potential for TEKNOFEST)/ 4 students |
| **WORKS AND PROCEDURES TO BE DONE IN THE PROJECT****(Put the item number on the left and write it in order)** |
| **Item**1. Literature survey on motor types, motor control algorithms and communication topologies.
2. Grasp the overall structure of electric vehicles, including the powertrain, battery management system (BMS), and motor requirements.
3. Master essential power electronics principles, such as inverters, converters, and pulse-width modulation (PWM) techniques used for motor control.
4. Learn how to design and simulate motor driver circuits, considering factors like efficiency, heat dissipation, and protection mechanisms.
5. Master printed circuit board (PCB) design for motor drivers, ensuring correct placement of power components and minimizing electromagnetic interference (EMI).
6. Set up test environments to validate motor driver performance under various load conditions, ensuring reliability, thermal management, and safety compliance.
7. Develop the ability to document the design process, results, and performance metrics effectively for technical reporting and future development.
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| PROJECT AIMS |
| **Item**1. Achieve maximum motor performance by minimizing energy losses, improving efficiency in various driving conditions, and ensuring smooth operation.
2. Design a motor driver that operates reliably under different load and environmental conditions, meeting automotive safety standards and protecting the system from faults or failures.
3. Implement sophisticated control algorithms (e.g., Field-Oriented Control, sensorless control) to enhance motor performance, responsiveness, and precision.
4. The students will develop all the required software (both functional and embedded) and hardware.
5. The students will implement and test the overall system.
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| **THE STUDENT TO WORK ON THE PROJECT** |
| Number | Name Surname | Signature |
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| **SUPERVISOR** |
| TitleAssist. Prof. Dr. | Name SurnameArda KILIÇ | Signature |