2024-2025 FALL SEMESTER ME 499 GRADUATION PROJECT LIST

Şube No (Group No)	Akademisyen (Lecturer)	Proje Adı (Project Name)	kontenjan 1. öğretim	kontenjan 2. öğretim
1	PROF.DR. NECİP FAZIL YILMAZ	Eklemeli imalat çalışmaları Makine öğrenmesi ve yapay zeka Metalik malzeme karakterizasyonu	6	6
2	DR. ÖĞR.ÜYESİ HAKAN ÇANDAR	Experimental Investigation of Welding Strength in Dissimilar Material Joints Using Friction Welding Techniques	2	2
3	DR. ÖĞR.ÜYESİ HAKAN ÇANDAR	Experimental Study on Patching Metal Surfaces with Different End Geometries Using Stud Welding Techniques	2	2
4	DR. ÖĞR.ÜYESİ HAKAN ÇANDAR	Maintenance and Repair of AWJ Intensifier Pumps: A Technical Study	1	1
5	PROF.DR. EMRAH ÖZAHİ	An experimental study on thermal insulation using waste materials	2	2
6	DOÇ.DR. ABDULLAH AKPOLAT	An investigation about production and industrial usage areas of Polytetrafluoroethylene (PTFE), also known as Teflon[R], synthetic fluoropolymer.	2	2
7	DOÇ.DR. ABDULLAH AKPOLAT	Magnetic Abrasive Finishing (MAF)	2	2
8	DOÇ.DR. ABDULLAH AKPOLAT	Plastic waste recycling techniques	2	2
9	DOÇ.DR. ABDULLAH AKPOLAT	Electronic waste recycling techniques	2	2
10	DOÇ.DR. ABDULLAH AKPOLAT	Additive Manufacturing and Additive Manufacturing of Gears	2	2
11	PROF.DR. ÖMER Y. BOZKURT	Desktop 5-axis CNC manufacturing (Masaüstü 5 eksen CNC yapımı)	2	2
12	PROF.DR. ÖMER Y. BOZKURT	Determination of mechanical properties of fiber-reinforced composite materials (Elyaf takviyeli kompozit malzemelerin mekanik özelliklerinin belirlenmesi)	2	2
13	PROF.DR. ÖMER Y. BOZKURT	Design and manufacture of a desktop experimental setup for determining mechanical properties (Mekanik özelliklerin belirlenmesi için bir masaüstü deney düzeneği tasarımı ve üretimi)	2	2
14	DR. ÖĞR.ÜYESİ M. ERKAN KÜTÜK	Solving Dynamics Problems by Geogebra	1	1
15	DR. ÖĞR.ÜYESİ M. ERKAN KÜTÜK	Modeling and Control of a Stewart Platform	1	1
16	DR. ÖĞR.ÜYESİ M. ERKAN KÜTÜK	Modeling and Control of a Ball Balancing Table	1	1
17	PROF.DR. M. SAİT SÖYLEMEZ	A survey on Energy Efficiency of iron industry	2	2
18	PROF.DR. M. SAİT SÖYLEMEZ	A research on Energy Management of a specific factory	2	2
19	PROF.DR. ADEM ATMACA	Akıllı ve Sürdürülebilir Şehirleşme için Dijital İkiz ve IoT Teknolojileri Entegrasyonu	3	3
20	DR.ÖĞR.ÜYESİ N. FURKAN DOĞAN	Simulation of Fatigue Behavior of Steel and Aluminum Materials under Different Loads with ANSYS	2	1
21	DR.ÖĞR.ÜYESİ N. FURKAN DOĞAN	Comparative Mechanical Analysis and Simulation of Glass Fiber and Carbon Fiber Reinforced Composite Materials: ANSYS Based Simulation and Experimental Analysis	2	1
22	PROF.DR. ÖMER EYERCİOĞLU	Design and construction of a desktop injection molding machine	1	1
23	PROF.DR. ÖMER EYERCİOĞLU	Construction of a pellet extruder for 3D-Printing	1	1
24	PROF.DR. ÖMER EYERCİOĞLU	An experimental study on abrasive flow finishing of 3D-printed parts	1	1
25	DR.ÖĞR. ÜYESİ ALİ KILIÇ	Design and Simulation of Off-Highway Vehicles Using MATLAB Simscape	1	1
26	DR.ÖĞR. ÜYESİ ALİ KILIÇ	Telehandler Boom Design and Kinematic Analysis Using Matlab Simscape	1	1
27	DR.ÖĞR. ÜYESİ ALİ KILIÇ	Telehandler Hydraulic System Design and Simulation Using Matlab Simscape	1	1
28	PROF.DR. NİHAT YILDIRIM	design of a hybrid (air/water) turbine-generator set & preliminary testings	2	2

29	PROF.DR. SADETTİN KAPUCU	**Modeling and Control of a Delta Robot** **Delta robots are parallel kinematic machines known for their high speed and accuracy. This project involves modeling the kinematics and dynamics of a delta robot and designing a control system to achieve precise motion.** **Tasks:** **Kinematic Modeling:** **• Develop forward and inverse kinematics models to relate the joint angles to the end-effector position and orientation.** **• Consider the geometric constraints of the delta robot's parallel structure. Dynamic Modeling:** **• Derive the equations of motion for the delta robot, accounting for the masses, inertias, and joint torques.** **• Consider the effects of friction, gravity, and other external disturbances. Control System Design:** **• Implement a suitable control strategy (e.g., PID, feedforward-feedback, or model predictive control) to regulate the joint angles and achieve desired end- effector trajectories.** **• Tune the control parameters to optimize performance and robustness. Simulation and Experimental Validation:** **• Simulate the delta robot's behavior using a modeling and simulation tool (e.g., MATLAB, Simulink).** **• Conduct experiments on a real delta robot to validate the model and control system.** **By completing this project, students will gain valuable experience in robotics**	1	1
30	PROF.DR. SADETTİN KAPUCU	**Modeling and Control of a 4-DOF Serial Robot (2 students)** **Serial robots are common in industrial automation and robotics research. This project focuses on modeling and controlling a 4-DOF serial robot, which offers flexibility in terms of workspace and tasks.** **Tasks:** **Kinematic Modeling:** **• Develop forward and inverse kinematics models to relate the joint angles to the end-effector position and orientation.** **• Consider the Denavit-Hartenberg (DH) parameters for representing the robot's geometry.** **Dynamic Modeling:** **• Derive the equations of motion for the serial robot, accounting for the masses, inertias, and joint torques.** **• Consider the effects of gravity, friction, and payload variations. Control System Design:** **• Implement a suitable control strategy (e.g., PID, joint-space control, or task- space control) to regulate the joint angles and achieve desired end-effector trajectories.** **• Tune the control parameters to optimize performance and robustness. Simulation and Experimental Validation:** **• Simulate the serial robot's behavior using a modeling and simulation tool.** **• Conduct experiments on a real 4-DOF serial robot to validate the model and control system.** **By completing this project, students will gain valuable experience in robotics**	1	1
31	PROF.DR. M. YAŞAR GÜNDOĞDU	**Human blood flow details for especially turbulent reqimes**	2	2
32	PROF.DR. M. YAŞAR GÜNDOĞDU	**Multi-purpose blood flow for transitional regimes.**	2	2
33	DOÇ.DR. FUAT YILMAZ	**Construction of an experimental water vortex turbine**	2	2
34	DOÇ.DR. FUAT YILMAZ	**Construction of a solar exhaust fan system**	2	2
35	DOÇ.DR. FUAT YILMAZ	**Construction of a supercapacitor**	2	2
36	DOÇ.DR. FUAT YILMAZ	**Numerical analysis of a turbine blade passage cooling of a jet propulsion cycle**	2	2
37	PROF.DR. NİHAT YILDIRIM	**Mathematical modelling and visual presentation of stray dog population growth**	2	2
38	DOÇ.DR. HÜSEYİN YAĞLI	**Off-grid smart green city design considering energy, building and food sustainability**	1	1
39	PROF.DR. AHMET ERKLİĞ	**Mechanical Properties of Epoxy Based Composites Reinforced with Fillers**	3	3
40	PROF.DR. AHMET ERKLİĞ	**Finite element analysis of Thickness, Hole Diameter, and the Fastener Types to Fastener Pull-Through Resistance of Composite Materials**	3	3
41	DR.ÖĞR.ÜYESİ SADIK OLGUNER	**Experimental investigation on the mechanical properties of epoxy matrix composites modified by nonwoven polypropylene fabric**	1	1
42	DR.ÖĞR.ÜYESİ SADIK OLGUNER	**Evaluation of various composite materials used in dental treatment by finite element analyses**	1	1
43	PROF.DR. A. TOLGA BOZDANA	**Generative Design: Concept, Tools and Applications**	1	1
44	PROF.DR. A. İHSAN KUTLAR	**Development of a defect detection system based on AI coding.**	1	1