DEPARTMENT OF MECHATRONICS ENGINEERING

**2023/2024 SPRING SEMESTER**

**MECE104 FUNDAMENTALS OF MECHATRONICS ENGINEERING**

**Instructors:** Prof. Dr. Can Çoğun, Prof. Dr. Müfit Gülgeç, Assoc. Prof. Dr. Çağlar Arpali, Assoc. Prof. Dr. Halit Ergezer, Asst. Prof. Dr. Ulaş Beldek, Lecturer Burkay Sarı

**Grading:**

Midterm : 25%

Lab. Activities (project) : 40%

Final : 35%

**Contents:**

* Definition of Mechatronics (Objectives, advantages and disadvantages of mechatronics) (1 hour)
	+ Mechanical Engineering and Machines in Mechatronics (Force, friction and lubrication, behavior of materials under load, structures, mechanisms) ( 3 hours)
	+ Robot Arm Training (2 hours)
	+ Additive Manufacturing, Laser Cutting, Computer Integrated Manufacturing (6 hours)
	+ Electrical and Electronic Engineering, The Branches of Electrical and Electronic Engineering (Electrical Engineering, Electronic Engineering, Communication Engineering, Electromagnetics, Control Engineering, Computer Engineering, Robotics), The Historical Background of Electrical and Electronic Engineering, Introduction to Basic Electrical and Electronic Components (4 hours)
	+ Mechatronic System Components (Actuators, Sensors, Control Systems, Input/Output Interfaces, Digital Control Loop) (4 hours)
	+ Control Engineering, Control Laboratory (2 hours)
	+ Fluid Power (2 hours)
	+ Factory Visit or Seminar (2 hours)