Mechatronics and Application

Autumn Semester 2019

Seoul National University

Professor: Prof. Heui Jae Pahk (RM 301-1521)

Lecture/Lab: Mon/Wed 16:00-17:50 at 301-305 (Lecture) and 301-112(Lab)

Abstract: This course is to provide the fundamental techniques for mechatronics and application such as: analog electronics circuit, digital electronics circuit, micro-processor, software programming, and mechatronics applications to practical system. This course begins with analog circuit design technique such as DC circuit, Capacitors, RC circuits, Filters, Diode Circuit, Transistors, and Operational Amplifiers. Digital electronics and microprocessor system are also introduced, including structure architecture, I/O interfaces, and software programming. For the laboratory schedule, Arduino environment is introduced for the major platform for designing and programming with practical application to devices such as sensors, LEDs, motors. Practical and innovative term projects are assigned as the group projects, and the full demonstration is scheduled with the contest.

Contents:

DC Circuit

Capacitors and RC Circuits

Filters

Diode Circuits

Transistors

OP Amps

A/D, D/A converters

Overview of microprocessor system

Data representation

Microprocessor architecture

System Bus Structure

I/O Interface

Software Programming

Demonstration and Contest

Evaluation: Attendance(10%), Mid Exam(20%), Final Exam(20%), Reports(10%), Term Project(40%)