

FACULTY OF ENGINEERING LABORATORIES

In the Engineering Faculty there are 51 laboratories in total, 34 for educational and 17 for research purposes, as of today (Oct. 23rd, 2015). You can access to the detailed lists of equipment in the inventories of these laboratories by using faculty's internet page-laboratory section (<http://muhf.cankaya.edu.tr/course.php?page=73>).

DEPARTMENT OF COMPUTER ENGINEERING LABORATORIES

General Purpose Computer and Microprocessor Laboratories: There are five such laboratories. These labs are used for application part of the courses as well microprocessor and microcontroller related assignments and projects.

CISCO Internetworking Laboratories: There are two such laboratories, providing the students a real network environment where students can develop experience on real network installation and management. The student can also use lecture and labs to prepare for CISCO CAN certificates.

Parallel and Scientific Computing Laboratory: Parallel and Scientific Computing Laboratory has a cluster of 34 Linux operating system based high-capacity computers. The lab is used for courses that require parallel programming and R&D studies in this field. The system can be accessed remotely, via <http://siber.cankaya.edu.tr/> link.

CUDA Teaching Center: The Department is chosen by NVIDIA (one of the leading companies in the graphics card sector) as "CUDA Teaching Center" on August 18, 2011. The lab can be used both for undergraduate and graduate assignments and projects.

Virtual Reality Laboratory: Game Research Laboratory is used to investigate game technologies – one of the fastest growing field. The lab consists of hardware and software suitable for game development, oculus virtual reality glasses, Unity 3D and Unreal game development engine.

Spatial/Medical Modeling and Simulation Laboratory: This lab is used in 3D tracking and measuring the motion and size of the objects and living organisms. There 5 computers, 2 printers and 2 optical tracking systems in the lab.

DEPARTMENT OF INDUSTRIAL ENGINEERING LABORATORIES

Work Study and Ergonomics Laboratory: This laboratory is mainly used for the IE 202 Work Study and Ergonomics course in the Industrial Engineering curriculum. By using tools such as stopwatch and environmental measurement instruments, students conduct time study activities and work environment evaluations. Besides, by using tools such as audiometer, tape measure and anthropometer, students learn how to define the standards of equipment used for providing workers a better work environment.

Modeling and Simulation Laboratory (ModSim Laboratory): This lab is primarily used for conducting the applications for simulation and modelling related industrial engineering course, and also for our students to study and do their assignments such as homework and projects.

Computer Aided Design (CAD) Laboratories (I and II): These laboratories are used mainly for engineering drawing courses.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORIES

Our department uses Electronic and Communication and Mechatronics Engineering Department education laboratories for the undergraduate programs.

Research Laboratories:

Optoelectronic and Nanoelectronic (OPEN) Laboratories: This laboratory includes systems used for production and characterization of electronic devices and materials.

DEPARTMENT OF ELECTRONIC AND COMMUNICATION ENGINEERING LABORATORIES

Electronic Laboratory: basic electronic student information components and measurement of current, voltage and frequency measurement as lessons are learned as a practical laboratory

Communication Laboratory: our students are wired, they are based on laboratory course of the wireless and optical communications technology.

Digital Electronics Laboratory: Microprocessor and are given basic training laboratory of digital circuits is the beginning of computer technology.

Optical Communication Laboratory: Students in the laboratory, in addition to laboratory experiments in fiber-optic communication and communication techniques have been performing experiments with laser technology.

Microwave and Antenna Laboratory: Students, advanced wireless communications as learning technology as well, mainly buyers learned of communication lab - makers principles, modulation, and they do work, including digital communications test and demodulation techniques.

Çankaya Electronic Design Community (ÇETT) Laboratory: In this laboratory course with any of our students or to build a completely electronic circuits associated with the hobby can work alone or in groups when we wanted to make measurements in the lab.

Workshop: Workshop provides technical support to all our laboratories in electronics and communication.

Research Laboratories:

Optics and Photonics Research Laboratory (OFAL): Research and development activities are performed in optics and photonics topics in this lab.

DEPARTMENT OF CIVIL ENGINEERING LABORATORIES

Currently operational instructional and educational laboratories in the Department of Civil Engineering are listed below. These facilities are equipped with hardware that has been designed to demonstrate to the students the physical replications of the fundamental concepts that are included in the introductory courses. The experiments cover the basic foundations of several courses with accompanying handbooks that have been written to allow students to follow in a logical manner the link between theoretical classroom material and their physical counterparts. Students are required to conduct the experiments and then to prepare a report that describes what they have done and how.

Fluid Mechanics and Hydraulic Laboratory: The 70 sq. m lab comprises modular test units that correspond to several curriculum courses: CE270: Fluid Mechanics, CE371: Hydraulics, CE372: Water Resources Engineering. In addition a number of experiments for departmental elective courses in the hydraulic engineering area can be carried out here.

Structural Mechanics Laboratory: The basic experiments that can be carried out in this 114 sq. m lab that is co-located with the geotechnical engineering lab are referenced directly by CE221: Engineering Mechanics: Statics, CE224: Mechanics of Materials and CE381: Structural Analysis.

Geotechnical Engineering Laboratory: This lab contains all of the fundamental experiments that are part of the introductory courses for geotechnical engineering. The courses that make use of the lab directly are CE104: Engineering Geology, CE361: Geotechnical Engineering and CE362: Foundation Engineering.

DEPARTMENT OF MECHANICAL ENGINEERING LABORATORIES

Machine Shop: The students produce work-pieces in the “manufacturing processes” and “metal cutting” courses. The machine shop also serves the students for any research/educational activities which involve manufacturing of a specific part, experimental set-up, or any working device.

Flexible Manufacturing Laboratory: After learning how to program the CNC machines, the students prepare the programs for their work-pieces, observe the manufacturing simulation and then manufacture them at the CNC machines. Robotic manufacturing cell applications are also made.

Mechanical Engineering Testing I/II Laboratories: These laboratories contain test and education sets for undergraduate courses. All test sets are integrated with data acquisition systems.

Welding Education Laboratory: There are MIG/MAG (metal gas welding), TIG (tungsten gas welding), metal arc welding machines and sheet metal cutters.

Research Laboratories:

Numerical Analysis Laboratory: The laboratory contains ANSYS (finite element analysis) and FLUENT (computational fluid dynamics) softwares for both educational and research activities.

Microfluidic Design and Characterization Laboratory: This laboratory aims to provide an environment for analysis, design, and testing of novel microfluidic devices and structures.

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING LABORATORIES

Metallography Laboratory (Educational Department Lab.): This laboratory dedicated to the analysis and characterization of metallic materials.

Mechanical Laboratory (Educational Department Lab.): This laboratory is used for determining the mechanical properties of the materials and the classification of materials with respect to mechanical behavior.

Scientific and Parallel Computation Laboratory (Educational Department Lab.): The Computational Quantum Chemistry Laboratory based in our department has been renovated to be used for education various fields of Materials Science and Engineering.

Research Laboratories:

Atomic Force Microscopy (NanoTechnology Research Laboratories): The Atomic Force Microscope (AFM) is a new generation microscope that gives topographical information about surface of the materials in the nano scale.

Scientific and Parallel Computation Laboratory (NanoTechnology Research Laboratories): This laboratory is aimed at solving all kinds of scientific, engineering and other computational problems that require High Performance Computing.

Biomaterials Laboratory (NanoTechnology Research Laboratories): In this laboratory experimental research is carried out on the production and characterization of advanced metallic biomaterial is for load-bearing (prostheses, dental implants, etc.) applications.

Advanced Metallic Alloys Laboratory (NanoTechnology Research Laboratories): Various advanced metallic alloy materials are studied for both fundamental and applied research.

Composite Materials Laboratory (NanoTechnology Research Laboratories): This laboratory is founded to study production and characterization of metallic and ceramic based composite materials.

Structural and Functional Materials Laboratory (NanoTechnology Research Laboratories): This laboratory is founded to study the production, optimization and characterization of advanced metallic based alloys and composite materials in the fields of biomedical, automotive and aviation research.

Materials Processing Laboratory (Nano Technology Research Laboratories): This laboratory is aimed at studying various processes (CVD, atmosphere-controlled heat treatment, etc.) for the production of advanced materials.

DEPARTMENT OF MECHATRONICS ENGINEERING LABORATORIES

Sensors and Measurement Laboratory: By using the equipment and the software in the laboratory, the students are trained with the sensor and software technology in the laboratory sessions of MECE 302 Sensors and Measurement class.

Robotics and Electric Machines Laboratory: The Educational Setup with Robotic Manipulator in the laboratory is composed of a six axis industrial robot arm and the software that allows access to and the control of the robot arm.

Control Systems Laboratory: The experimental setups in the laboratory contribute to the practical understanding of the control engineering topics of both undergraduate and graduate students.