

## **FACILITIES**

Currently, the Department of Civil Engineering has 10 laboratories to serve the needs of the students.

### **Hydraulics Lab**

Head of Laboratory: Dr. Badronnisa Yusuf  
Assistant Engineer: Nik Muhamad Faiz Nik Yahaya

The lab contains equipments for carrying out experiments on basic fluid mechanics such as Bernoulli's theorem, force of moving fluid and flow over sharp-crested weir, using apparatus mounted on hydraulic bench. Other apparatus available are energy loss in pipe and pipe network apparatus, as well as a tilting flume for experiments on open channel flow. The hydrology apparatus is also available for running experiment on rainfall-runoff. There are portable equipments such as, rainfall gauges and current meters, which are used by students doing appropriate final year projects. These apparatus are sufficient for the teaching of undergraduate students.

### **Structure Lab**

Head of Laboratory : Dr. Farah Nora Aznieta Abd. Aziz  
Assistant Engineer : Mohammad Haffis Hamid

This laboratory serves courses in Structural Materials, Analysis and Design. The laboratory comprises of equipments for carrying out experiments on basic material properties, structural theory and design such as material tests on concrete, steel and timber, structural analysis model tests and structural test of reinforced concrete beams, columns, slabs and walls, which are used by students doing their final year projects in the area of Materials and Structures. These apparatus are sufficient for the teaching of undergraduate students.

### **Geological Engineering lab**

Head of Laboratory: Dr. Zainuddin Md. Yusoff  
Assistant Engineer : Suhkeri Hadafi Abu Bakar

The lab contains rock and mineral samples for students to understand the basic properties of rocks and minerals apart from providing a space for the students to carry out activities in understanding and interpreting geological maps. The lab also contains basic equipments to support undergraduate final year projects such portable shear box and slake durability test equipments.

### **Geomechanics lab**

Head of Laboratory: Dr. Haslinda Nahazanan  
Assistant Engineer : Mohd Razali Abd Rahman

The laboratory classes comprise of soil classification tests, compaction and CBR test, permeability tests, consolidation tests and shear strengths. The students are expected to produce reports (to an acceptable standard) for every tests conducted. These tests are considered as an aid for the students to appreciate and understand the behaviour of soils. Advanced testing and research equipments such as triaxial, Rowe's consolidation and Geotextile filtration equipment are also available.

### **Materials Lab**

Head of Laboratory: Dr. Noor Azline Mohd Nasir  
Assistant Engineer : Fairus Ismail

The lab houses, Instron Testing Machine for the tension test of steel which is fundamental for the understanding of the behavior of steel at various levels of loading. Compression test equipment is also available to carry out tests on concrete cube and cylindrical specimens that would give an insight of concrete compressive strength behavior. Other apparatus available are the Slump Test equipment and a VCAT apparatus that would enable students to study the consistency and setting time of cement mortars. An asphalt penetration device and a Ring & Ball apparatus are also made available for students to run tests that would give the asphalt physical properties such as penetration and softening point respectively. A miniature concrete mixer is provided in the laboratory for students to carry out concrete mix designs for applications.

### **Geomatics Lab**

Head of Laboratory: Assoc Prof. Dr. Helmi Zulhaidi Mohd Shafri  
Assistant Engineer : Wan Zakaria Wan Yusoff

The lab contains equipment for carrying out experiments and fieldworks on land surveying techniques such as leveling using automatic levels, distance and angle measurements using theodolites and total station, setting-out, earthwork, route surveying, and others. More advanced equipment such as Global Positioning System (GPS) receivers are also available for more advanced experiments that will suit final year undergraduates and graduate students.

### **Civil Engineering Design Laboratory**

Head of Laboratory: Assoc. Prof. Dr. Biswajeet Pradhan  
Assistant Engineer : Wan Zakaria Wan Yusoff

The lab provides facilities for students to learn and practice working in team. Several IT facilities are provided such as PC with civil engineering design software. Hardware such as A0 plotter and scanner are in place. Ample space for meeting, discussion and presentation are also provided for student to nurture their skill in managing project and enhance their leadership skill and teamwork.

### **Public Health Laboratory**

Head of Laboratory: Dr. Syazwani Idrus  
Assistant Engineer : Aminuddin Amdam

The Public Health Laboratory is mainly used to carry out experiments concerning testing of water and wastewater such as chemical coagulation, pH, acidity, alkalinity, total solids, turbidity, Color, COD, BOD, DO, microbiological tests, total Phosphorous, Ammonia-Nitrogen, total Nitrogen and Nitrate, total hardness, and total organic Carbon. All the required chemical, glassware, ovens, refrigerators, autoclave, air compressor, centrifuge, flask shaker, incubator, blender, analytical balances, overhead stirrer, microscope, pumps, Zeta meter, pH meter, DO meter, COD rector, T.O.C analyser, Spectrophotometer and Jar test are also available to conduct the experiments. The available laboratory facilities are sufficient for the teaching of undergraduate students.

### **Traffic Laboratory**

Head of Laboratory: Dr. Hussain Hamid  
Assistant Engineer : Azry Tamber

The Lab contains equipment for observation, recording and data display of traffic movement (vehicles and pedestrians) both for teaching and research purposes, e.g. video camera & video player with television sets, laser speed gun and vdas traffic counter. These equipments are used in teaching as well as for data collection by students for their final year projects within the area of Traffic Engineering

### **Highway Laboratory**

Head of Laboratory: Prof. Dr. Ratnasamy Muniandy  
Assistant Engineer : Azry Tamber

The lab houses, Material Testing Apparatus (MATTA) for the resilient modulus, fatigue and repeated axial load tests which are fundamental for the understanding of the behavior of asphalt mixtures at various levels of loading and temperatures. A complete set of aggregate test equipments are available to carry out tests on aggregates that would give an insight of aggregates and their physical properties such as impact, crushing, polished stone and abrasion values. An asphalt penetration device and a Ring & Ball apparatus along with rotational viscometer are also made available for students to run tests that would give the asphalt physical properties such as penetration, softening point and viscosity. A heavy duty mixer is also available in the laboratory for students to carry out asphalt mix designs for applications. By looking at the nature of the course and its applicability in other courses and the industry, it is found that the materials laboratory is considered average only compared to any international standards.

### **Computer Facilities & Software**

There are 20 units computers at the Civil Engineering Design Laboratory, Department of Civil Engineering. Several numbers of software have been installed to assist teaching and learning process such as MXROAD (5 licence), ENVI (15 licence), PCI (15 licence), ArcGIS (30 licence) and SCIA Engineer (30 licence). Besides, there are also five common computer laboratories at the Faculty of Engineering managed by the Faculty, for use by all programmes. The laboratories have been equipped with softwares such as MATLAB, AUTOCAD, etc.