



Appendix 3-11 Introduction to Major Laboratories



Introduction to the Laboratory of Civil Engineering Major

The Civil Engineering major has several laboratories, including the Structural Laboratory, the Building Engineering Laboratory, the Safety and Traffic Engineering Laboratory, the Geotechnical Engineering Laboratory, etc. The basic information is as follows:

1. Structural Laboratory

The Structural Laboratory was founded in 2002. Currently, the laboratory space covers an area of 4,500 square meters. It mainly undertakes two undergraduate experimental teaching courses: "Experimental Techniques for Civil Engineering Structures" and "Inspection Techniques for Civil Engineering Structures". The total value of the experimental equipment is over 23 million yuan. It is equipped with advanced domestic eight - channel electro - hydraulic servo loading control systems, Italian IDS ground - penetrating radar, low - frequency pulsating fatigue testing machines, 500 - ton long - column presses, DASP dynamic acquisition and testing systems, multi - functional vibration testing systems, ultrasonic detectors, ground - penetrating radar and other sophisticated instruments and equipment. There are also two - way reaction walls for horizontal loading, trough - type reaction pedestals, and box - type reaction pedestals, enabling the completion of large - scale structural model experiments. The laboratory can meet the experimental teaching requirements at different levels, including basic experiments, professional experiments, innovation experiments, and industry - university - research cooperation experiments during the experimental teaching process. It is responsible for the civil engineering structure experimental teaching of the civil engineering and urban underground space engineering majors. Meanwhile, it is open to all teachers and students of the university, fully meeting the needs of students' extracurricular research - based, innovative, and self - directed research - learning practices. Each year, more than 1,500 students participate in experiments, with the total man - hours of experiments



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reaching 65,000.

2. Building Engineering Experiment

The Building Engineering Laboratory was established in 2002. In 2006, it was designated as a construction unit for the demonstration laboratory of basic courses in higher education institutions in Hunan Province during the "11th Five - Year Plan" period. It mainly undertakes experimental courses such as Engineering Mechanics Experiments, Material Mechanics Experiments, and Materials for Hydraulic Engineering. The laboratory has an experimental area of 3,043 m² and is equipped with more than 500 sets of experimental instruments and equipment, with a total value of over 6 million yuan. The instruments and equipment are advanced, practical, and reasonably configured, which can well meet the needs of experimental teaching in building engineering. The Building Engineering Laboratory is an important platform for the integration of industry, education, and research, and has achieved remarkable results in educational reform and scientific research. In the past five years, the laboratory staff have developed a total of 20 experimental projects, including 10 basic experimental projects. The annual man - hour of experiments reaches 44,300.。

3. Safety and Traffic Engineering Laboratory

The Safety and Traffic Engineering Laboratory was established in 2008. Currently, the laboratory has a floor area of 879 m². It mainly undertakes experimental courses such as "Operation of Traffic Signal Controllers", "Man - Machine Comprehensive Experiment", and "Experiment on Inflammable and Explosive Substances". The total value of experimental equipment is over 2.3 million yuan. It has a large number of advanced experimental devices, including tower crane training devices, asphalt rutting testing machines, and traffic control systems. These facilities can meet different levels of experimental requirements in the experimental teaching process, such as professional experiments, innovation experiments, and industry - university - research cooperation experiments. Apart from undertaking the teaching of experimental courses for civil engineering and traffic engineering majors, this laboratory is also open to students from all majors in the university. It can



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accommodate more than 4,900 person - times of students to participate in experiments throughout the year. By leveraging platforms like the Civil Engineering Testing Center of Hunan City University, the laboratory engages in social services and has gained a good social reputation.

4. Geotechnical Engineering Laboratory

The Geotechnical Engineering Laboratory was established in 2008. Currently, the laboratory space covers an area of 1,107 m². It mainly undertakes two undergraduate experimental teaching courses, "Soil Mechanics Experiments" and "Rock Mechanics Experiments", and is open to students from all majors in the university. Each year, over 500 students participate in experiments, with the annual reception exceeding 12,000 person - times. At present, the value of testing instruments and equipment is more than 10 million yuan. It is equipped with fully - automatic consolidation apparatuses for basic soil mechanics experiments, soil particle analyzers, sand - bath boxes, static triaxial testing machines, and an advanced multi - functional unsaturated soil dynamic triaxial testing system suitable for undergraduate innovation projects. Additionally, it has been equipped with modules such as bender elements and a freezing system.