

The Construction of Rock Mechanics Quality Course

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Abstract. The rock mechanics courses in the college of construction and engineering of Jilin University was founded in the early 1980s. After years of development, we have got significant achievement in practice base construction and improvement of teaching content, relying on a strong base of scientific research and project support conditions, and make the quality courses with distinct characteristics.

Introduction

The rock mechanics course in our institute was established in the early 1980s. It has been taught to the undergraduate students of hydrogeology and geo-engineering Section of the Hydrogeology and Engineering Geology Department of Jilin Geosciences College from 1980. And the numerical calculation of the geotechnical engineering, rock slope mechanics and engineering and underground rock excavation courses have been taught from 1988. Rock mechanics course has a feature that theory and practice must be combined closely, so practice teaching is a necessary part of the course. The purpose of the internship and practice design is not only to make the students to use, and develop the abilities of students to practice, but also can help them improve the skills to identify problems and solve practical problems.

The base for teaching and practice to Rock mechanics has been established in Jingyuetan, outskirts of Changchun, and six internship programs has been founded. The base has been developing after that, especially for the quality course project in 2001, the new four additional practical was contented, and 4 original internship programs was reformed. At present, there are 10 internships contents for teaching and practicing. The base for teaching and practicing base is at a leading domestic level, because of the increasing of practice contents, reform and renovation of equipment. At the same time, a number of comprehensive tests are set up in the practice and practical teaching, and these projects for practice and test are important and effective used methods for production, scientific research. After training and exercise from practice teaching, the students master more comprehensive skills for production and research, and they also quickly become the backbone of the business when they work, so the competitiveness for career of the students in our school has been improved.

The Achievement of Teaching for Quality Course

Rock mechanics course is a core curriculum for Civil Engineering and Geological Engineering in our institute, and one key course of the College to build. It has been a quality courses with distinct characteristics in our college, for venue fully subsidized by the college with providing the help in the teachers, curriculum construction, laboratory instruments. Rock mechanics is taught to the students of Civil Engineering (direction to geotechnical engineering, tunnel and underground engineering), and the undergraduates who major Exploration technology and engineering (direction

to engineering geology, and, survey and engineering). When teaching, we also tell the students the professional orientation, applications and the objectives of training clearly, and make students understand the objectives of this course.

The construction of network resources for Rock mechanics is including online courses, Online Test, teaching videos, and other content. According to the characteristics of rock mechanics that both the theory and practice are of importance, we have developed the audio-visual materials for rock mechanics teaching practice, and developed a large number of software for the course of geotechnical engineering, so that we greatly improve the teaching methods, and enhance the quality and the level of teaching. we have produced multimedia network teaching system for rock mechanics courses, which is more suitable for students learning online, and makes teaching more vivid and intuitive. In the future, we will also continue to improve the features of courseware based on the needs of teaching, and make it more intelligent, dynamic, involved, simple and integrated, for producing high-quality courseware.

The network curriculum resource of rock mechanics are rich and detailed, including the content of the course descriptions, course of study, lesson plans, course outlines, teaching team, and review questions ,for improving the abilities of students' self-study, and improving the quality and effect of teaching. In addition, the teaching group for rock mechanics produced the database of rock mechanics test by using software system that is involved in all concepts, principles, calculation of rock mechanics, which are the formation of the question material and the preparation of the test database. The syllabus, exam typesetting, automatic form of examination papers, are given by the software system ,so that the examination proposition is scientific and rational, and is of simplified norms, with improving the quality and level of examination. The network video system for teaching not only records the teachers' teaching for rock mechanics courses ,but also enables students to review the lectures content after the course at any time.

The achievement for the teaching of rock mechanics course is remarkable, at the same time enriches the teaching content and teaching methods, and highlights the characteristics, for the active efforts of the teachers for the courses, and based on conditions of scientific research and project support, and years of the quality course construction.

The Quality Course under Construction Led the Building for Teaching Group

Echelon of this course construction consists of 8 people belong to Tunnel and Underground Engineering Department ,College of Construction Engineering , including 1 doctoral tutor, 3 professors, 2 associate professors, 1 lecturers, 1 lab technician, 1 laboratory assistant, and there are 5 people having a doctorate . There are 3 teachers over the age of 50, 1teacher over the age of 40, 4 teachers over the age of 30. There are often 140-150 students to teach a year, and the ratio of student to teacher is 15:1.

Rock mechanics course project team focuses on the training of the teachers, and establishes a good mechanism which is conducive for the outstanding teachers to come to the fore ,and encourages and supports teachers in serving to enhance the level of degree, to participate in scientific research work, and constantly improve the academic level, innovation and organization and coordination skills. At the same time teachers are encouraged to participate in foreign language training for the backbone teachers, and the foundation for bilingual teaching. Each teacher also undertakes at least one new lesson's teaching, with the existing professional teaching, especially encourage young teachers to teach new courses. All the teachers have also undertaken and completed a large number of professional teaching practice, and guided graduation design ,from which, the professional level and the ability to work of teachers have get exercise and improvement. We keep international exchanges with Kyushu University in Japan, Kanazawa University, Kyoto University, Korea Foundation Institute, Russian Far East National University and remain inter-school exchanges with China University of Geosciences (Beijing), Beijing Jiaotong University, China University of Mining and Technology, Shijiazhuang Railway Institute and other institutions. In the years of 2007 and 2008, young teachers and graduate students are selected by the fine course project team to the University of Seoul, Korea, the Russian Far East National University for

further education, and that broadens their horizons ,and makes them master the discipline front tendency, enrich teaching ideas.

Teachers group is of reasonable structure, excellent quality, so that we can ensure the smooth progress of the various teaching work. Teachers have shown a strong sense of responsibility, initiative and teamwork in the teaching activities.

The Characteristics and Innovation of the Construction of Quality Courses

(1) The comprehensive theory and practice teaching system have been founded, and we have developed the practice teaching base of long-term stability, which is advanced in our country. After years of development, laboratory and teaching practice base have got the rapid improvement. For the rock mechanics teaching practice base, internships content is comprehensive, and the equipment is domestically advanced. Compared with similar institutions in our country, the practice base is the only teaching practice base for rock mechanics in situ, and is at the domestic advanced level.

(2) The intensive instruction and research promote each other. The teaching of rock mechanics course is based on research, and keeps up with the forefront of the development of domestic and international disciplines, and makes students have a strong ability in practical work and able to service for the practice and researches of rock mechanics engineering.

(3)The teachers group always highlights the characteristics of the course, and focuses on integrating theory with practice, and strengthens students' practical ability. Based on teaching and test, practice base and research projects, and a strong ability for experiments and production of the students has been cultivated.

After 20 years of construction of Jingyuetan practice bases, the basic testing method of rock mechanics has reserved the leading test conditions and test facilities. We should extend opportunities for students to participate in trials, in order to make it more conducive to the teaching and internship of undergraduate students. In addition, with the rapid development of geotechnical engineering and continuous improvement of the pilot test methods, as well in order to training students to adapt to future work environment quickly and grasp the current state of the test means, the latest scientific and technological achievements should be added to rock mechanics practice ,and the new test methods and means should be used to the practice teaching, for keeping up with the times of the pace of development.

The Construction of Quality Courses Based on Scientific Research

Rock mechanics has become the school curriculum as early as 1992, and the construction achievement of the courses (subjects) got first prize of school Excellent Teaching Achievement Award, and first prize of the Excellent Teaching Achievement Award of the Education Commission of Jilin Province and the the second award of State Education Commission excellent Teaching Achievement Award.

In recent years, the courses (subjects) group have participated and completed a National Natural Science Foundation of China, a Doctoral Fund projects, and five provincial and ministerial researches, and there is 3 provincial and ministerial researches being undertaken currently; and the courses (subjects) group has published more than 50 papers in the domestic core journals. In recent years, under the leadership of academic leaders, the courses (subjects) group has committed a number of tunnel engineering research projects of the Communications Department of Jilin Province, and carried out a large number of rock mechanics research work, and had a broad impact in the country, which led to constant improvement for the level of curriculum construction.

In short, in the positive efforts of the course lecturers and members, as well relying on a solid foundation for scientific research and project support conditions, rock mechanics course has made significant progress in all aspects after a few years quality course construction, especially for that the construction of practice teaching has get a leading position in the same disciplines, which enriches the teaching content and teaching methods.

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