

Mainframe Course Syllabus Provided in Tongji University

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Abstract

Tongji University is one of China's leading universities renowned for its technology and engineering. The IBM/Tongji joint education project began in 2005 with the installation of an IBM eServer z900 mainframe computer in School of Software Engineering of Tongji University. With the help from IBM, Tongji has developed a series of courses which will present in this paper.

Introduction

Tongji University, located in Shanghai, founded in 1907, is one of China's leading universities renowned for its technology and engineering. The name Tongji suggests cooperating by riding a same boat. Its tradition of precisely observing, truth seeking and down-to-earth attitude has been penetrated in every corner throughout the history of the university.

The School of Software Engineering, Tongji University (SSETU) locates in the beautiful new Jiading Campus of Tongji University, it is a new and dynamic school focusing on bringing students into practical, high-end software professionals. Since its foundation in 2001, the School has achieved remarkable success and ranks top five among its peers in China.

Since IBM officially launched the IBM eServer zSeries University Program by providing mainframe servers, related software and faculty trainings to selected partner universities in the year 2005, Tongji has been the only university in east China participating in this program, and has established a long-term cooperative relationship with IBM for technology researching and talents cultivating.

Under this university program, IBM Technology Center was set up in SSETU on October 17, 2005. With the advantage of the high-qualified faculty groups and advanced facilities from SSETU, as well as strong technical support from IBM, the Center has achieved fruitful results in carrying out the training and researching programs and enhancing academic-industrial cooperation. The achievements have been recognized by the industry through various contests, in which grand prizes are gained. The students of SSETU, trained for both theoretical and practical developing skills, become highly demanded mainframe professionals and are accepted by companies like IBM, Citicorp Software, Autos&Origin, State Street, Hi Sun etc.

Facilities

The School has a 64-bit zSeries z900 machine, model 2064 with maximum process speed 600 MIPS, 16G memory, and 873G Shark ESS. The machine equipped with z/OS V1.8, Linux for zSeries operation system, DB2 V7 V8, IMS, Websphere 5.0, CICS TS, etc. It supports JCL, C, COBOL, JAVA, FORTRAN, PL/I, and Assemble language.

The School also equipped with an IBM pSeries machine for teaching on AIX operation system course and researching on related project. The center has three IBM xSeries Netfinity 8665-61Y PC servers. Two of them are configured as Linux Samba server. One has been used as a server of teaching document and technology material storage. Another has been used as a server hosting students' projects and assignments storage.

All of these facilities provide ideal environment for large-scale enterprise computation and high volume data analysis, it especially fits for applications requiring high standard data processing ability, stability and security.

Syllabus

The School offers a series of practical mainframe courses. Students' projects are required for each advanced course. Students are trained for mainframe developing skills, project management and system administrating. Upon completing the studying, students are able to design, develop, test and maintain mainframe applications, as well as both theoretical knowledge and hands on experience on the mainframe system maintenance and administration.

In generally, the course structure can be divided into two plans: Application development and System Administration. Students choose their specialties by taking different courses according to their interests. At the end of each plan, a student is led to an 'Application Programmer', a 'System Programmer (Database)', or a 'System Programmer (System Administrator)'. IBM certificates are granted to qualified students upon completion of each course plan.

The outline of mainframe technology courses list as Table 1.

Specialty	Branch	Courses	Attribute	Credit	Hours			Semester	Prerequisites
					Total	Lectures	Lab		
MAINFRAME TECHNOLOGY	Application Developing	Introduction to the New Mainframe and z/OS Basic	Required course	4	64	32	32	3	
		Large Scale Business Database	Required course	2	32	24	8	4	

	Enterprise Database Application Development	Required course	3	48	24	24	5	Introduction to the New Mainframe and z/OS Basic
	Mainframe Programming Language (COBOL)	Required course	2	32	16	16	5	Introduction to the New Mainframe and z/OS Basic
	CICS and Transaction Development	Required course	2	32	16	16	6	Introduction to the New Mainframe and z/OS Basic COBOL Programming Language
	Case Study of Mainframe Banking System	Elective course	3	48	16	24	6	CICS and Transaction Development
	DB2 Query Optimization	Elective course	3	48	30	18	6	Enterprise Database Application Development
System Administration	Principle of z/OS System Management	Elective course	3	48	40	8	4	Introduction to the New Mainframe and z/OS Basic
	Practice of Mainframe System Administration	Elective course	2	32	20	12	5	Introduction to the New Mainframe and z/OS Basic
	Mainframe Assembly Language	Elective course	2	32	16	16	6	Introduction to the New Mainframe and z/OS Basic

		DB2 Database Administration	Elective course	2	32	16	16	6	Enterprise Database Application Development
		Project Management	Elective course	2	32	24	8	6	

Table 1: Outline of mainframe technology courses

Feedback from Students

Most students who decide to take Mainframe courses have strong interests on these courses provided by the School. Most of them rather take the whole series courses, in stand of take one or two courses individually. Students like to spend more time on hand-on labs rather than reading redbooks or speaker notes. On one hand, it's good that students could gain solid knowledge from practice work. On the other hand, it's a challenge for lecturers to carefully design all the labs and homework.

Conclusion

Over the past four years, Tongji has worked with IBM to develop the joint study program. The project benefits both the School and IBM in various ways. Through this program, the students have a unique opportunity to learn the world class technology. IBM has also been able to deliver concepts, technology, and applications. The faculty staff of the school is work collaboratively with IBM research and development staff on emerging technology initiatives.

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