MISTI China

MIT International Science and Technology Initiatives

International Education at MIT: Hands-on Learning in a Global Laboratory















Programs

Individual Internships

Companies and Research Institutes

Team Internships :

MIT-China Educational Technology Initiatives (CETI)

MIT-China & MIT-OpenCourseWare MIT-China & MIT-iCampus MIT-China & MIT-D-lab MIT-China & Chinese High Schools

Intern Requirements



- MIT student/recent alum in good standing
- GPA: B Average or better
- Support of MIT Faculty Advisor
- Two years of Chinese language study (or equivalent) for <u>individual</u> internships; one semester of Chinese for <u>team</u> internships
- Course on modern China
- Spring Training: 17.549 "Issues in Contemporary China" 3 credits



Host Institutions

Individual and Team Internships (a few examples)

- Dalian University of Technology
- Fudan University
- Kunming University of Science & Technology
- National Taiwan University
- Peking University
- Qinghai University
- Shandong University
- Tsinghua University
- Xi'an Jiaotong University
- Yunnan University
- Zhejiang University

- Asian Development Bank
- Beijing Olympic Committee
- UNDP
- UNIDO
- US Embassy, Commercial Section
- World Bank

china educational technology initiative

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

`mit iCampus

MIT-China Educational Technology Initiatives (CETI)



With President Clinton in Beijing, 1998



With Ambassador Charlene Barshefsky in Cambridge MA, 2002

OCW Site Highlights

- Syllabus
- Course Calendar
- Lecture Notes
- Assignments
- Exams
- Problem/Solution Sets
- Labs and Projects
- Simulations
- Tools and Tutorials
- Video Lectures

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Earth, Atmospheric, and Planetary Sciences Economics	Newsletter Sign and news from I	n up for monthly MIT OCW.	courses, MIT is delivering on the promise of OpenCourseWare that we made in 2001. We are thrilled that			
Electrical Engineering and Computer Science		ourses <u>en Españ</u>	educators, students, and self-learners from all parts of the globe tell us that MIT OCW			
Engineering Systems Division	Foundation Support MIT OCW is funded jointly by the <u>William</u> and Flora Hewlett Foundation, the Andrew W. Mellon Foundation, and <u>MIT</u>				is having an impact on education and learning. We hope that in sharing MIT's course materials and our	
Foreign Languages and					experience thus far with MIT	
Health Sciences and Technology					OCW, we will inspire other institutions to openly share their course materials, creating a worldwide web of knowledge	
History					that will benefit mankind." - Charles M. Vest, President of MIT	

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2004 Pilot OCW Project: Qinghai University Qinghai Province



Tibetan-Qinghai Plateau



Xining, Qinghai Province



MIT-China & OpenCourseWare

Qinghai University



2004 Qinghai Team



Qinghai University



Impromptu Xining television interview: 2005



Qinghai Project Overview

Schedule

- Three Lectures, two recitations, one lab per week
- Four English classes per week
- 100 Students
 - 40 second-year 'General Studies' students
 - Three groups of 20 thirdyear students majoring in Bio, EECS, Environmental



Syllabus (1)

- Biology
 - OCW Materials from 7.012, 7.03, 7.02 (Intro to Biology, Genetics, Biology Laboratory)
- OCW Usage
 - Review of concepts, prep for lecture, notes, problem sets, exam questions



Syllabus (2)

- EECS
 - Based on 6.001
 (Structure & Interpretation of Computer Programs)
- OCW Usage -Notes, labs, exams



Syllabus (3)

- Environmental Engineering
 - Materials from 1.061 and 1.031 (Env. Transport Processes & Geotechnical Eng.)
- OCW Usage
 - Prep for classes: notes, example problems, quizzes, supplemental materials



Qinghai Teaching Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
9am	CS Lecture	Culture	Environmental	Culture	Biology
		Presentation	Lecture	Presentation	Lecture
10am	Environmental	Recitation #1	Biology	Recitation #1	CS Lecture
	Lecture		Lecture		
11am	Biology	Recitation #2	CS Lecture	Recitation #2	Environmental
	Lecture				Lecture
12pm					
	Lunch	Lunch	Lunch	Lunch	Lunch
1pm					
		Recitation #3		Recitation #3	
2pm	Lab #1		Lab #2		Lab #3
3pm					
4pm	Fnalish	English	English	Fnalish	
	g				
5pm					
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Tsinghua and Xi'an Jiaotong Universities (Summer 2005)

- 8 weeks
 - 6 at Tsinghua University, Beijing
 - 2 at Xi'an Jiaotong University
- Main Objectives
 - Establish exchanges between Chinese universities and MIT
 - Demonstration of MIT EECS class structure and OCW/ iCampus technologies
 - Obtain feedback from faculty and students on technologies



Tsinghua University Department of Computer Science & Technology









Tsinghua University, Beijing

- 6 weeks during June and July 2005
- Collaboration with Tsinghua's CS dept
- 16 students, entering freshmen
 - 12 from China's NOI top 20
 - 4 from China's IMO team
- Team members
 - Chang She ('05, Course 6-1)
 - Shiling Seow ('06, Course 6-2)
 - Vanessa Hsu ('05, Course 6-1)
- Other MIT participants
 - Stephanie Claussen ('05, Course 6-1)
 - Scot Frank ('08, Course 6)
 - Angus Hucknall (M.S.'05, Course 3)



Program Structure

	MON	TUES	WED	THURS	FRI
9 - 10	6.034 Lecture		6.034 Lecture		
10-11	6.001 Lecture	6.001 Recitation	6.001 Lecture	6.001 Recitation	OpenCourseWare Seminar
11 - 12	Culture/ Communication	6.034 Recitation	Culture/ Communication	6.034 Recitation	iCampus/xTutor Seminar
12 - 1:30	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30-3	LAB	LAB	LAB	LAB	



Program Curriculum

- Structure and interpretation of computer programs (6.001)
 - Covered up to 80% of course material
 - Used MIT Scheme and XTutor for homework
 - Assigned projects 0 and 1, Avatar project optional

• Artificial Intelligence (6.034)

- Mostly lectures and recitation, no assigned homework
- Lectures based on Prof. Winston's lectures
- Individual presentations by student on AI topics





Supplementary Material

- Culture and Communication component
 - American idioms/English pronunciation
 - MIT Culture and Hacks,
 - Giving technical talks
- Seminars on other OCW
 & iCampus projects



Xi'an Jiaotong University Department of Computer Science





Xi'an Jiaotong University

- Shorter program
 - August 1-11
- Approximately 30 students
 - Rising sophomores in EE, CS and Communication
- Condensed version of curriculum as a demo class
- iLabs EE OCW introduction





Curriculum @ Xian JiaoDa



Weekly Schedule

Mornings: 9-12 AM



6.001 Lecture (Structure and Interpretation of Computer Programs)
Culture and Communication modules
6.012 Lecture/Lab (Microelectronic Devices)

MITOPENCOURSEWARE Afternoons: 2-5 PM

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- 6.034 Lecture (Artificial Intelligence)
- Tutorials/Computer Lab

Dalian University of Technology (Summer 2005)



MIT-China & iLabs

• iLabs- remote (online) access to MIT Laboratories





Dynamic signal analyzer (EECS, deployed 2004)



Microelectronics device characterization (EECS, deployed 1998)

iLabs at MIT



Polymer crystallization *(Chem. E., deployed* 2003)



Shake table (Civil Eng., deployed 2004)

Heat exchanger (Chem. E., deployed 2001)



iLabs & OCW: Microelectronics Weblab

Service Broker



Introduction to Java

- Modified version of SP.772 Spring 05 OCW
- 5 hrs per week to 40 students for 4 weeks
- Lectures interweaved with labs
- Topics included control structures, arrays, methods, classes, and list structures
- Introduced GUI and Swing in last lab

Dalian OCW Java Lecture



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Introduction to Microelectronics

- Modified version of 6.004 OCW Courseware from Spring 2005 course
- 3.5 hrs per week to 80 students for 3 weeks
- CMOS diagrams
- circuit design with FETs and gates using Jsim
- Full adder, 4-bit adder
- MOSFET & diode experiments using WebLab

Dalian OCW Microelectronics Lecture



Preliminary Conclusions

- Impact on Chinese Universities
- Impact on MIT
- Challenges & Obstacles
- Early Lessons (for similar collaborations in other parts of the world)

2006 Program Expansion

- Dalian University of Technology
- Kunming University of Science & Technology
- Qinghai Normal University
- Qinghai University
- Shandong University
- Tsinghua University
- Xi'an Jiaotong University
- Yunnan University
- Zhejiang University

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