

Delivery of Education in Microelectronics in China

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Introduction

- **Basic concept:**
 - PSU courses/degree for Shanghai students at IIIST
 - Computer Science/Electrical & Computer Engineering
 - English language graduates for international companies in Shanghai/Pudong/China
 - Graduates for Portland companies in China
 - Entry to graduate study in USA
 - PSU students in Shanghai for summer internships
- **Juniors & seniors are PSU students**
 - Upper division transfer program
- **Three partner institutions**

International Institute for Information Science & Technology (IIIST)



- Private institution
- Chartered by Shanghai City
- Historical links to Fudan University
- Program site on Pudong campus



Soochow University

Suzhou



- Large public urban university
- Monitors lower division math, science, and general education courses taught at IIIST
- (Portland & Suzhou "sister" cities.)



Portland State University (PSU)



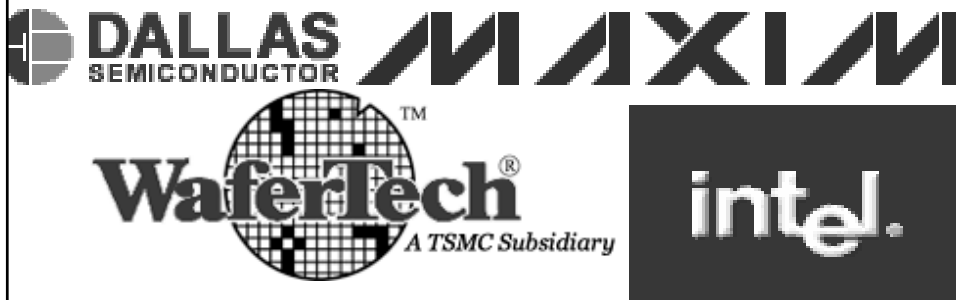
- State-supported comprehensive urban university.
- History (GI Bill)



Semiconductor fabs; ESI, FEI, Planar
Mentor Graphics, Synopsys, Cadence
Flextronics, Merix, Maxtek, InFocus, Credence

Silicon Forest:
Microelectronics

Tektronix
Enabling Innovation



PSU BS Degree

- Lower division (freshman/sophomore):
 - Transfer IIIST/Soochow courses (Math, science, etc)
 - Most courses local, in Chinese
 - PSU technical courses (EAS/CS/ECE etc) in English
 - Distance education, non-degree
- Upper division transfer program
 - Transfer IIIST → PSU after sophomore year
 - Compare local community college transfer programs
 - GPA and TOEFL for CECS admission (standard)
- Upper division (junior/senior):
 - PSU technical courses, labs, electives, UNST
 - Capstone design project (internships)
- Graduate with PSU degree!



Syllabus (see handouts)

- **Electrical Engineering: Microelectronics**
- **Computer Engineering: VLSI**
- **PSU ECE classes in red**
- **PSU CS classes in blue**
- **IIIST/Soochow classes in black**
- **Early emphasis on English language**
 - English language courses do not count for BS
 - English literature, technical communication, etc count



The PSU/IIIST Distance Delivery Model

- **Asynchronous Internet streaming**
 - Most PSU CS and ECE courses
 - Classes taped while offered on PSU campus
 - Lecture notes, supplements added before stream sent
 - Onsite Chinese instructor acts as mentor
 - PSU faculty approve Chinese onsite instructors
- **WebCT**
 - Upper division general education classes
 - Some labs (taught by PSU faculty)
- **ECE laboratories—use some Fudan lab facilities**
- **Senior capstone design**
 - Industrial co-op internships



PSU faculty travel to Shanghai to present tutorials



Motivation for Program

- **PSU Presidential Internationalization Initiative**
- **PSU students: summer in Shanghai/China**
 - Two weeks courses (Chinese, culture/history)
 - One week optional travel (Beijing, Xian, etc)
 - Ten weeks industrial internship (Shanghai/Suzhou)
- **Graduate student recruitment**
- **Research collaborations (Fudan/Jiaotong)**
- **Service to Portland companies (employee educ)**
- **Future: Chinese companies locate in Portland!**
- **IIIST: Provide US technical education**
 - US educational style; US content; English language

PSU Summer Internships

- Internship in Suzhou (Manufacturer of Hearing Aids)



- ST Microelectronics (Mfg of Microprocessors, Microcontrollers, Chipsets)



PSU's ECE PROGRAM

Portland State UNIVERSITY

Program Statistics & Retention

- Current enrollment: ~ 300+ students
- 80% CS, 20% ECE
- 4 terms per year
- Approx 50 PSU courses taught/year
- 29 CS students graduated 2005
- 50 CS students graduated 2006
- 10 ECE students graduated 2007

	Freshman	Sophomore	Junior	Senior	Graduated
2002	21				
2003	23	17			
2004	17	22	15		
2005	10	16	18	14	
2006	21	10	10	17	10

Portland State UNIVERSITY

Finances

- Oregon in-state resident rates
 - **BUT**
 - **Heavily discounted by scholarships**
 - **Share revenue PSU/IIIST**
- Self-supporting, funds PSU student travel
- Fees rise with GNP to Oregon standard



Ongoing Challenges

- Improving distance delivery quality
- English level of students: Summer ESL and TOEFL
- Everyday English in classrooms
- Local instructors: PSU courses core or supplements?
- Accreditation: BS in Science with ECE Specialization
- Engaging 100% of PSU faculty involved
- Administrative issues: scheduling, registration, admissions, etc.
- Recruitment: Central Government recognition



Successes to date

- Program is financially self-supporting
- PSU faculty travel to China
- PSU/IIIST graduates applying to PSU for graduate school (fall 2007: 2/7 from first ECE class)
- Capstone industrial internships
- Placement rate of graduates
- PSU students summer travel to China (internships)
- PSU students taking classes at IIIST
- Pudong support (future MSECE?)
- Student satisfaction

