



International Technological University

Student Handbook

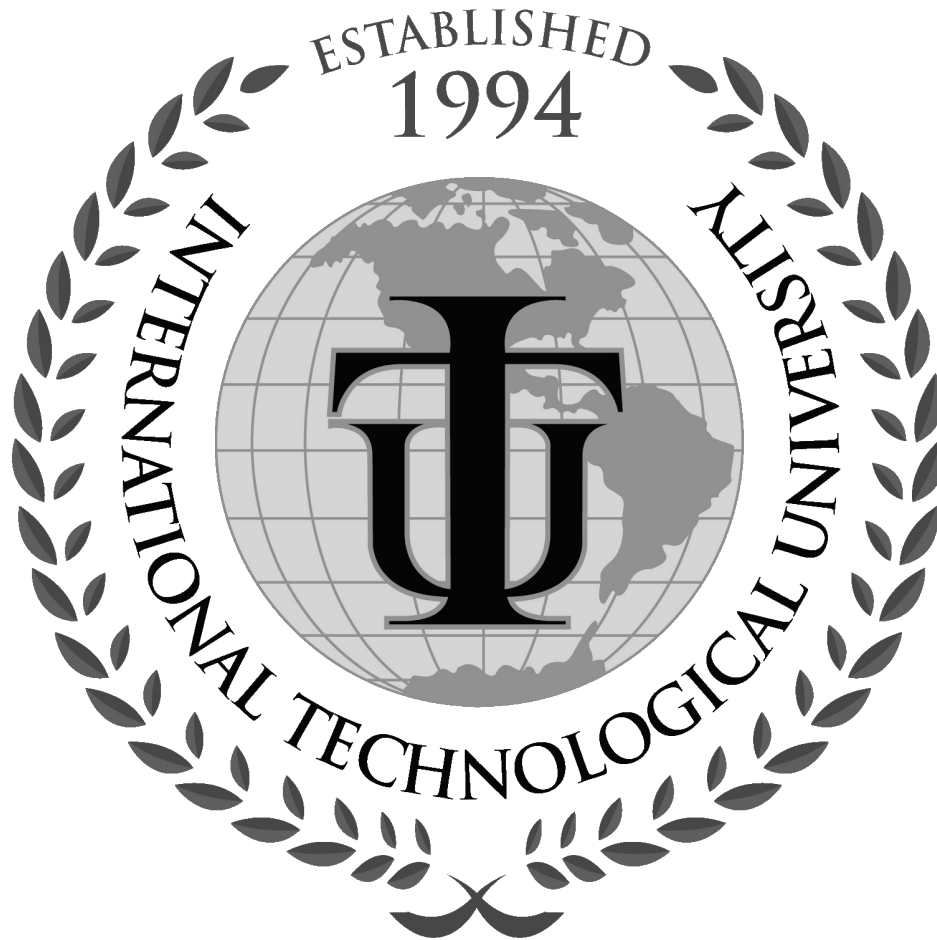
2012 - 2013

This publication is an announcement of the current programs and course offerings of International Technological University. It is intended for information purposes only and is subject to change without notice. Courses, faculty assignment, prerequisites, graduation or completion requirements, standards, tuition and fees, and programs may be changed from time to time. Courses are not necessarily offered each term or each year.

International Technological University retains the exclusive right to judge academic proficiency and may decline to award any degree, certificate, or other evidence of successful completion of a program, curriculum, or course of instruction based thereupon. While some academic programs described herein are designed for the purposes of qualifying students for registration or certification, successful completion of any such program in no way assures registration or certification by any agency.

ITU has been recognized as a Candidate for Accreditation by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges, 985 Atlantic Avenue, #100, Alameda, CA 94501, 510-748-9001. This status is a preliminary affiliation with the Commission awarded for a maximum period of four years. Candidacy is an indication that the institution is progressing toward Accreditation. Candidacy is not Accreditation and does not ensure eventual Accreditation. Questions about Eligibility may be directed to the institution or to WASC at wascsr@wascsenior.org or 510.748.9001.

**International Technological University
Student Handbook
2012-2013**



**International Technological University
355 W. San Fernando St
San Jose, CA 95113 USA
Main: (888) 488-4968
Fax: (408) 400-2001
<http://www.itu.edu>**

TABLE OF CONTENTS

A Message from the Founder	1
Philosophy & Vision	2
Statement of Mission, Purpose, and Outcomes	4
Mission	4
Purpose	4
Institutional Learning Outcomes	5
University Location	5
Map	7
1. Admissions	8
Academic Scheduling	8
Trimester Admissions:.....	8
General Application Requirements	8
Master’s Degree Application Checklists:	9
Doctorate Degree Application Checklist:	12
General Requirements:	12
Admissions Requirements	13
Transfer Credits of Undergraduate or Graduate Degrees:	13
2. Financial Information	14
Tuition and Fees per Trimester	14
Making Payments	14
Encumbrance of Registration and Records	15
Financial Obligations and Refunds	15
3. Registration Information	15
Adding and Dropping Courses	16
Scheduling	16
4. University Policies & Regulations	17
Student Code of Conduct	17
Article I: Terminology	17
Article II: Judicial Authority.....	18
Article III: Proscribed Conduct.....	18
Article IV: Judicial Policies.....	19
Appeals	21
Academic Policies	22
Nonacademic Policies	29
Campus Policies	30
5. Degree Programs & Requirements	34
Graduate/Master’s Degree Titles and Specialization	34
Business Administration Department:	34
Computer Science Department:.....	34
Digital Arts Department:	35
Electrical and Computer Engineering Department:.....	35
Engineering Management Department:.....	35
Doctorate Degree Titles and Specialization	35
Business Administration Programs:	36

Masters of Business Administration in Bio-Management.....	36
Curriculum	36
Program Learning Outcomes:.....	37
MBA - Bio-Management Requirements	37
Masters of Business Administration – Green MBA	38
Program Learning Outcomes:.....	38
Green MBA Requirements.....	38
Master of Business Administration in Healthcare Management.....	39
Curriculum:.....	39
Program Learning outcomes:	39
MBA - Healthcare Management Requirements:.....	40
Master of Business Education.....	40
Program Learning Outcomes:.....	40
Master of Business Education Requirements	41
Master of Business Administration	41
Program Learning Outcomes:.....	43
MBA Concentration Requirements:	43
Global Executive Master’s of Business Administration	45
Team-based Learning.....	45
GEMBA Curriculum	46
Doctor of Business Administration	47
Program Learning Outcomes:.....	47
DBA Requirements	48
Curriculum for Doctor of Business Administration:	48
Computer Science Programs:.....	48
Master of Science in Software Engineering.....	48
Program Learning Outcomes:.....	49
MSSE Requirements.....	50
Digital Arts Programs:.....	51
Master of Science in Digital Arts (MSDA).....	51
Prerequisites	52
MSDA Requirements.....	52
Electrical Engineering Programs:.....	52
Masters of Science in Electrical Engineering.....	52
Program Student Learning Outcomes:.....	53
MSEE Requirements	53
Masters of Science in Computer Engineering.....	54
Curriculum:.....	54
Program Learning Outcomes:.....	54
MSCE Requirements	55
Doctor of Philosophy in Electrical Engineering.....	55
Program Learning Outcomes:.....	57
Ph. D. in Electrical Engineering Requirements:	58
Engineering Management Programs:.....	58
Masters of Science in Engineering Management.....	58
Curriculum:.....	59
Program Learning Outcomes:.....	59
MS Engineering Management Requirements.....	59
Master of Science in Industrial Management.....	60
Admission Requirements:	60

Program Requirements:.....	60
Curriculum:.....	60
Program Learning Outcomes:.....	61
Interdisciplinary Sciences Programs:.....	61
Doctor of Philosophy in Consilience Sciences.....	61
Program Requirements.....	61
6. Course Descriptions.....	63
Prerequisite Requirements.....	64
APPLIED MATHEMATICS (AMN).....	64
COMPUTER SCIENCE (CSN).....	66
COMPUTER ENGINEERING (CEN).....	70
DIGITAL ARTS (MMM).....	75
ELECTRICAL ENGINEERING (EEN).....	79
ENGINEERING MANAGEMENT (SEM).....	90
SOFTWARE ENGINEERING (SEN).....	91
BUSINESS ADMINISTRATION.....	102
7. Facilities.....	127
Library Resources.....	127
Research Labs.....	133
ITU Basketball Court.....	133
Student Lounge.....	133
8. Student Activities and Services.....	134
Academic Advisement.....	134
Placement Assistance.....	134
Student Health, Safety, and Housing.....	134
Student Council.....	134
Student Organizations and Alumni Association.....	134
Academic Achievement Recognition.....	135
Student Tuition Recovery Fund.....	135
University Officers.....	I
Academic & Administrative Officers.....	I
Department Chairs.....	II
Admissions and Student Records Department.....	II
Accounting Department.....	II
Board of Trustees.....	III

A Message from the Founder

Today, interdependency among nations is a working reality. Global developments in communications and technology mark the dynamic, changing nature of socio-economic and political relations among nations. International cooperation is now a prerequisite of any large-scale business operation, and absolutely necessary to maintain competitiveness and survivability. Individuals educated to think and work with an international consciousness are best equipped to lead in our new global neighborhood.

We should have a greater understanding of this new global network. It is in the spirit of global vision combined with the recognition that modern technology is the bonding power among nations. Hence, I present to you a model for the future of international education. Combining this cooperative vision with the latest research in science, technology and management, International Technological University (ITU) will continue to make major contributions to the fields of development, environmental protection and international cooperation.

The location of ITU is unique. The state of California combines the richest resources with the most congenial conditions available in the United States. Silicon Valley is the capital of the world's hi-tech industry. Stretching along the south shores of the San Francisco Bay, it is blessed with a superb climate, major universities, and a rich cultural and historical heritage. It is a hub of the American West, an international trade center, and a gateway to the Pacific and the world.

The United States created and is the present leader in the high-technology revolution. However, there is no guarantee that the U.S. will maintain dominance in this field. In recent years, Asia - and particularly China - has emerged as a major contributor in the modern world of high technology. If the U.S. is determined to maintain its present position, it



must take the lead in harnessing the technological developments overseas as well as create a new hi-tech culture that fosters the exchange of technological development for the benefit of all citizens of our world. With this understanding, China will be a major partner and beneficiary of ITU's research, development, and production. Furthermore, in their efforts to market technology, Asian countries will find in ITU a vital resource for their continued development and modernization.

We are now in the new millennium with the challenge of solving contemporary problems while achieving the unfinished agenda of the future. Modern society must engage in a constant search for the good in its quest for the better. International Technological University is dedicated to excellence in global education and leadership for the twenty-first century.

**Professor Shu-Park Chan, Ph.D.
Founder/President Emeritus**

Philosophy & Vision

ITU Global Vision

International Technological University is a materialization of the educational ideals of the 21st century. ITU embraces the belief that technological advances in communication, transportation, and trade have made cross-cultural interaction and cooperation inevitable and desirable. The University plays a special international role by attracting international talent (students, professors, industry innovators and entrepreneurs), identifying their particular cultural strengths and needs, and matching those elements together into optimally functional teams to push forward technological advancement on a global basis.

Silicon Valley Leader

Silicon Valley has changed the face of the world with technological innovation married with startup funding. We are the world's capital for microelectronics, software development, internet & computing industries, biotechnology as well as the financing of these entrepreneurial ventures. Now with the exploding growth of the \$20 billion world-wide game development industry and the establishment of Lucas Films in San Francisco, Hollywood-styled media entertainment and game creation are powerful forces injected into Silicon Valley's landscape. ITU's founders, executive team and faculty are the pioneers and top innovators in all of these fields. These technology, business, media and venture capital leaders have gathered together with a shared vision for globalization and created ITU, a model of educational excellence that defines the hi-tech, media and business future for the Silicon Valley and the rest of the world.

Innovative Education

ITU recognizes that the engineering profession has outgrown the existing model of academic education. The present academic model is based on the classical science curriculum. This model sets a solid foundation of theoretical knowledge, but it is slow to innovate and lacking in practical application. Classical academic curriculum requires only a limited exposure to laboratory work. However, like biotech research, medicine and law, engineering is a profession requiring a significant level of hands-on experience for competence. In the industry, engineers are very often confronted with problems characterized by a lack of complete information, as opposed to the neatly defined textbook problems taught in schools.

Application Oriented Training

There is a "relevance gap" between the theory taught in present day engineering education and the practical realities of industry. As a result, the tremendous resources typically found in educational institutions – intellectual excellence, a virtual "think-tank" research environment, an abundance of low-cost and highly innovative talent, a captive "test-bed" population of students – is wasted. Thus, a new model for engineering

and business education is required, where a marriage between theory and practice is achieved. ITU has introduced this model based on a flexible, cross-disciplinary curriculum designed to meet the needs of top-caliber engineering, business and digital arts students interested in the hi-tech entrepreneurial environment.

Consilience: The Convergence of Disciplines

The Silicon Valley has observed the merger of expertise across engineering fields and seemingly unrelated industries. No hardware chip is created today without absolute dependence on CAD software programs. The best hardware development companies are thus housed with electrical engineers who possess a deep understanding of the nature of software design. Similarly, biotech and pharmaceutical companies now invent drugs and new molecules using computer-based bioinformatics programs that efficiently replace the test-tube process of laboratory experimentation. Life science students interested in a career in biology are therefore best served with at least a minimal dose of software engineering theory and application. The film entertainment field, well-known for flashy special effects, has pushed the envelope of computer simulation technology, crossing over to pioneer real-time, non-intrusive 3D heart modeling for cardiac hospital patients. Heart attacks are now prevented and lives saved by discoveries made by Hollywood special effects engineers and artists. These dramatic developments reflect the consilience of knowledge across disciplines in the new world in which we now live.

Cross Disciplinary Curriculum

ITU's founders pioneer these changes, both in academic research and in the hi-tech startup creation of the Silicon Valley. ITU's curriculum therefore actively promotes cross-disciplinary study for all students. Business students are encouraged to take computer engineering courses (like IT Security), furnishing the knowledge-base every corporate business must have to "secure" their bottom line. Electrical Engineering students are encouraged to take performance art courses (like acting) to raise their communication skills. These "soft skills" are absolutely essential to their future success in breaking into management positions from their technical engineering roots. In Silicon Valley, the failure of most start-up hi-tech companies is due to a lack of effective marketing expertise, despite advanced proprietary technology. At ITU, our hi-tech entrepreneurial MBA program offers a focus in multimedia marketing, which includes optional production classes in animation, digital film and e-commerce production. By combining the best of modern application technology and the newest thinking in consilience science, the structure of ITU's curriculum facilitates cross-fertilization between engineering, business marketing, media production, and individual performance excellence.

Silicon Valley Based China Focus

The Silicon Valley sits on the Pacific Rim and has long served as America's window to China and other Asian countries. Many of the

founding members of ITU are hi-tech entrepreneurs with Chinese origins who continue to influence and do business in Asia. ITU thus has a natural connection and strong desire to bring the most advanced technology and the American educational model to benefit China's emerging culture and economy. Within the next few years, ITU will expand its program offerings in China and contribute to the quickly changing educational infrastructure there, reflecting the best of both the Chinese and American traditions. With this open invitation, we invite you to join ITU in this noble and exciting mission.

ITU Nondiscrimination Policy

ITU is a non-profit organization incorporated in the State of California under International Technological University Foundation. It is treated as a publicly supported organization and is governed by its Board of Trustees. ITU does not discriminate on the basis of race, color, national and/or ethnic origin, sex, marital status, sexual orientation, handicap/disability, religion, veteran's status, or age in the administration of any of its educational policies, admission policies and programs, as well as employment-related policies and activities.

Statement of Mission, Purpose, and Outcomes

Mission

International Technological University (ITU) strives to provide superior graduate education, research and innovation in the fields of engineering, business administration, media/entertainment, interdisciplinary sciences, health and individual performance. Our mission is carried out through the two-pronged focus of globalization of our educational model and maintaining continual industrial relevance. Core to our mission are the values of community engagement and enrichment, embracing innovation, enhancing entrepreneurship, and empowering our community through multicultural diversity and ethical practices. ITU is an embodiment of our motto, "**Global Development Through Silicon Valley Education.**"

Purpose

The purpose of ITU is to foster excellence in education for students particularly interested in the hi-tech entrepreneurial field. All our programs have an applied nature with emphasis on a few specialty areas tailored to the market needs of Silicon Valley companies. Students are actively encouraged to affiliate or intern with relevant local industry firms from the very beginning of their academic studies as an integral part of

ITU's academic pedagogy. The institutional outcomes of ITU are to ensure the following:

- Relevant internships integrated into academic programs from the beginning of a student's tenure
- A special focus on practical engineering, business, biotech, and media arts research projects
- Programs and courses designed to support full and part-time students
- Courses created at the speed of newly developing Silicon Valley technological innovations
- Systemically designed, competency-based courses that utilize innovative instructional methods
- Public speaking and technical writing proficiency as integral to degree requirements
- Curriculum emphasizing environmental protection technologies
- An Advisory Board consisting of Silicon Valley industry leaders that shapes the nature and content of ITU's programs
- An international exchange of students

Institutional Learning Outcomes

1. Close linkages between ITU's offerings and the current needs and technologies of industry through active involvement with Silicon Valley leaders.
2. Courses are created at the speed of technological innovation in the Silicon Valley with special emphasis on strong application for students to achieve competency in their respective fields of study.
3. Proficiency in public speaking, technical writing, and critical thinking are integral parts of degree requirements.
4. That the curriculum emphasizes technologies and studies pertaining to sustainability and environmental protection.
5. Promotion of international exchange of scholars and students from locations around the globe.

University Location

International Technological University's Silicon Valley location provides access to one of the most well known hubs for entrepreneurial activity. The innovative atmosphere of Silicon Valley and the wider San Francisco Bay Area provides students with a unique environment from which to draw inspiration. The excitement, innovation and opportunity of

the Silicon Valley is dispensed into the classrooms through our reputable faculty members, and class sessions. The energy of technology, entrepreneurship, and commerce is all around.

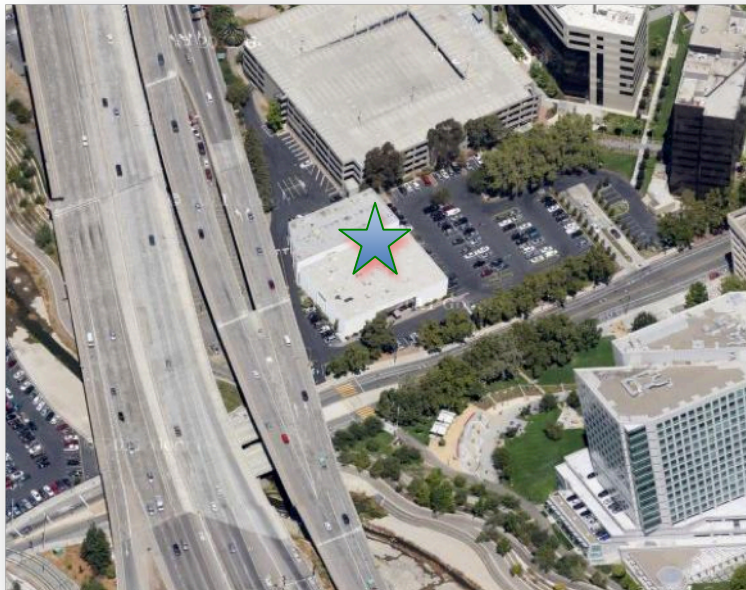
On March 28, 2011 ITU finalized its move to downtown San Jose. Some of the many leading firms within five miles of ITU include: HP, Apple, INTEL, Microsoft, Yahoo! Google, AMD, ATMEL, Juniper Networks, Symantec, Cypress Semiconductor, SUN, NASA, Cisco, Applied Materials, Silicon Graphics, Adobe Systems, Altera, Adaptec, Cadence, Electronic Arts, Oak Technology, Brocade, Radius, Nvidia, Synopsis and IBM.

San Francisco, Marin County, Berkeley, Oakland, and the Santa Cruz beaches are all an hour away by bus, train, or car. The Monterey Peninsula, Carmel and the famous Napa Valley wine country are all less than two hours away. San Jose International Airport is about five miles from campus.

**University Address: 355 W. San Fernando St
San Jose, California 95113
Tel: (888) 488-4968
Fax:(408) 331-1026**

Map

Below is a satellite photo of ITU's campus provided by Google Maps®.



Below is a map of ITU's campus with surrounding streets provided by Google Maps®.



1. Admissions

It is advised that applicants submit all required materials no later than a month prior to the start of desired trimester. Applicants can send necessary documents to the following address:

**Admissions Office
International Technological University
355 W. San Fernando St
San Jose, CA 95113**

Academic Scheduling

Trimester Admissions:

Applicants may apply for admissions into any of the three Trimester Terms each year.

General Application Requirements

All ITU Applications must include:

1. Completed ITU Application Form (online or hard copy)
2. Non-refundable Application Fee
(See website for updated International and Domestic Student Application Fees)
3. Transcripts from previously attended colleges, universities and/or training institutions (equivalent evaluation records keeping with the documentation practices of applicant's home country)
4. Non-native English speaking applicants must meet one of the following requirements before graduation:
 - i. Take the Test of English as a Foreign Language (TOEFL) within five years prior to admission, with minimum admission score of IBT 61, or CBT 173 respectively; or take the International English Language Testing System (IELTS) with minimum score of 6.0
 - ii. Completion of required ESL courses at ITU or ITU approved institutions

ALL APPLICANTS: Please read the following information and send the appropriate materials based on your individual situation.

PLEASE NOTE: The term **International Students** refers to all students who need F1 status to attend ITU. The term **Domestic Students** refers to all students who do not need F1 status, including legal U.S. residents/citizens.

Master's Degree Application Checklists:

Domestic Application Checklist:

1. ITU Application Form
2. \$80 Application Fee
One time fee, nonrefundable payable via Personal Check, Money Order, Cashier's Check, Demand Draft, Traveler's Check, or Debit or Credit Card. If paying with Credit/Debit card, fill out a Debit/Credit Card Authorization Form. Please make checks payable to "International Technological University".
3. Official Transcripts From Previous Schools
Include any transcripts from previous universities, or relevant education. Transcripts should be translated into English.
4. Passport Copy / Birth certificate
5. Current Mailing Address
6. Copy of Undergraduate Diploma or Provisional Certificate

First-time F1 Application Checklist:

1. ITU Application Form
2. \$80 Application Fee
One time fee, nonrefundable payable via Personal Check, Money Order, Cashier's Check, Demand Draft, Traveler's Check, or Debit or Credit Card. If paying with Credit/Debit card, fill out a Debit/Credit Card Authorization Form. Please make checks payable to "ITU".
3. Official Transcripts From Previous Schools
Include any transcripts from previous universities, or relevant education. Transcripts should be translated into English.
4. Passport Copy
Include a copy of the first and last pages of your Passport.

5. Submit TOEFL, or IELTS score
ITU requires applicants to have a minimum of IBT 61/CBT 173 for TOEFL, and a minimum of 6.0 for the IELTS.
6. Original Bank Statement
Original copy of bank statement showing a minimum of \$17,500. Applicants must have proof of an additional \$8,000 per dependent. For example, an applicant with an infant and a dependent spouse must show a total of \$33,500, having a total of \$8,000 per dependent. Bank statements must come directly from the bank, and must include an official stamp and signature from your banking institution. Any documents printed from the internet will be rejected.
7. Notarized Letter of Affidavit
Fill out and submit a Letter of Affidavit if you are being sponsored. If you are student being sponsored by a company/resident within the US, then your sponsor is responsible for filling out an I-134 Form.
8. Submit Copy of Visa and I-94
Once you have received your VISA and I-94 you will need to make copies, arrange a meeting with our Admissions Office, and submit a copy of both documents for our records. These documents must be submitted in person.
9. Copy of Undergraduate Diploma or Provisional Certificate

For application status, please contact Jose Dominguez at djose@itu.edu.

Allow 2-3 weeks for processing applications. Learn more about ITU's courses and available majors by browsing this site. You can also contact us at: (888) 488-4968.

Transfer Students on F1 Application Checklist:

1. ITU Application Form
2. \$80 Application Fee
One time fee, nonrefundable payable via Personal Check, Money Order, Cashier's Check, Demand Draft, Traveler's Check, or Debit or Credit Card. If paying with Credit/Debit card, fillout a Debit/Credit Card Authorization Form. Please make checks payable to "International Technological University".
3. Official Transcripts From Previous Schools

Include any transcripts from previous universities, or relevant education. Transcripts should be translated into English.

4. Current Mailing Address
5. Passport Copy
Include a copy of the first and last pages of your Passport.
6. Submit Copy of Visa and I-94
Please send a copy of both documents for our records.
7. Original Bank Statement
Original copy of bank statement showing a minimum of \$17,500. Applicants must have proof of an additional \$8,000 per dependent. For example, an applicant with an infant and a dependent spouse must show a total of \$33,500, having a total of \$8,000 per dependent. Bank statements must come directly from the bank, and must include an official stamp and signature from your banking institution. Any documents printed from the internet will be rejected.
8. Notarized Letter of Affidavit
Fill out and submit a Letter of Affidavit if you are being sponsored. If you are student being sponsored by a company/resident within the US, then your sponsor is responsible for filling out an I-134 Form.
9. Copy of Undergraduate Diploma or Provisional Certificate

For Applicants in the States for Less than 1 Year, Submit TOEFL, or IELTS score

1. ITU requires applicants to have a minimum of IBT 61/CBT 173 for TOEFL, and a minimum of 6.0 for the IELTS.

Changing Status to F1 Application Checklist:

1. ITU Application Form
2. \$80 Application Fee
One time fee, nonrefundable payable via Personal Check, Money Order, Cashier's Check, Demand Draft, Traveler's Check, or Debit or Credit Card. If paying with Credit/Debit card, fillout a Debit/Credit Card Authorization Form. Please make checks payable to "ITU".
3. Official Transcripts From Previous Schools

Include any transcripts from previous universities, or relevant education. Transcripts should be translated into English.

4. **Passport Copy**
Include a copy of the first and last pages of your Passport.
5. **Original Bank Statement**
Original copy of bank statement showing a minimum of \$17,500. Applicants must have proof of an additional \$8,000 per dependent. For example, an applicant with an infant and a dependent spouse must show a total of \$33,500, having a total of \$8,000 per dependent. Bank statements must come directly from the bank, and must include an official stamp and signature from your banking institution. Any documents printed from the internet will be rejected.
6. **Notarized Letter of Affidavit**
Fill out and submit a Letter of Affidavit if you are being sponsored. If you are student being sponsored by a company/resident within the US, then your sponsor is responsible for filling out an I-134 Form.
7. **Current Mailing Address**
8. **Submit Copy of Visa and I-94**
Once you have received your VISA and I-94 you will need to make copies, arrange a meeting with our Admissions Office, and submit a copy of both documents for our records. These documents must be submitted in person.
9. **Copy of Undergraduate Diploma or Provisional Certificate**

Doctorate Degree Application Checklist:

General Requirements:

1. ITU Doctorate Student Application Form
2. \$80 Application Fee
One time fee, nonrefundable payable via Personal Check, Money Order, Cashier's Check, Demand Draft, Traveler's Check, or Debit or Credit Card. If paying with Credit/Debit card, fillout a Debit/Credit Card Authorization Form. Please make checks payable to "ITU".
3. Minimum 3.5 Graduate GPA
4. **Official Transcripts of All Prior Work**
Include any transcripts from previous universities, or relevant

education. Transcripts should be translated into English.

5. **Submit GRE/GMAT Satisfactory Score**
Send official records of your scores from either test to the Admissions department.
6. **Three Letters of Recommendation**
7. **Statement of Interest**
The maximum length of your Statement of Interest should be 2 pages, and should express in detail your interest of doctoral studies at ITU and in your area of study.
8. **Resume/Curriculum Vitae**
If applicable, please include examples of published materials.

Admissions Requirements

Transfer Credits of Undergraduate or Graduate Degrees:

- Credit units earned at other universities, colleges and educational institutions may be transferred into ITU up to 25% of the total number of credit units needed to graduate or as evaluated by the Admissions Committee on a case-by-case basis
- Students who wish to transfer in credits from prior universities, must submit the request before they complete 19 units at ITU. Up to 9 units might be approved by the program chair.

2. Financial Information

Tuition and Fees per Trimester

ITU Application Fee (Domestic/International/Transfer) <i>One time fee, nonrefundable, sent with application form</i>	\$ 80.00
Tuition for All ITU International Students <i>Per credit hour in any major</i>	\$ 400.00
Registration Fee	\$ 50.00
Early Registration Fee <i>Trimester scheduling only</i>	\$ 25.00
Late Registration Fee <i>Trimester scheduling only</i>	\$ 100.00
Student Association Membership <i>Per term or equivalent month</i>	\$ 15.00
Late Payment Fee	\$ 20.00
Class Drop Fee	\$ 20.00
Class Add Fee	\$ 10.00
Fee for Filing Petition for Incomplete Grade	\$ 50.00
Fee for Course Examination Under Challenge Test Option	\$ 100.00
Graduation Fee <i>When Filing for Graduation Request</i>	\$ 120.00
International Campus Graduation Fee	\$ 120.00
Auditing Fee <i>Per graduate credit hour</i>	\$ 350.00
Academic Transcript Fee <i>Per copy</i>	\$ 15.00
Returned Check Fee	\$ 100.00
Switching Payment/Holding Check	\$ 50.00
Defer 1-20	\$ 30.00
Computer Lab Fee	\$ 10.00

Making Payments

We accept the following forms of payment:

- Personal Check
- Money Order
- Cashier's Check
- Demand Draft
- Traveler's Check
- Debit or Credit Card (contact accounting staff if paying with a card)

Please send all payments to the following address:

**Accounting Department
International Technological University
355 W San Fernando St
San Jose CA 95113**

Encumbrance of Registration and Records

Students who owe money to ITU will not be permitted to register and receive an official transcript of their credits or diplomas. Foreign students will not be entitled to receive certification for practical training until they pay off their balance

Financial Obligations and Refunds

With the exception of the first term's tuition of International Students, ITU Domestic Students may formally withdraw from a class by completing a *Course Drop Form*. If a student withdraws from a course (i.e. drops the course by processing the withdraw form), s/he may be eligible to receive a refund. The last class date or lecture hour (whichever is later) before the *Course Drop Form* is received will be used to calculate the refund in accordance with the following schedule. The student must, however, return all checked out items such as library books and equipment prior to refund. This policy is effective as of Spring 2011. The detailed refund schedule for a typical 3 credit hour class is as follows:

<u>Date of Withdrawal</u>	<u>% of Tuition Refundable</u>
Before the first day of a trimester	100%
Before the 2nd meeting of class or the 4 th class hour	90%
Before the 3rd meeting of class or the 7 th class hour	75%
Before the 4 th meeting of class or the 10 th class hour	60%
After 4 th meeting of class or the 12 th class hour	No Refund

3. Registration Information

Adding and Dropping Courses

Students may not add a course after the end of third week of instruction in the trimester scheduling system. The deadline for dropping a course is no later than the end of the third week of the term. Dropping a course after the fourth week of instruction will result in a grade of WP or WF (W=Withdraw, P=Pass, F=Fail), depending on whether or not the student was passing or failing the course at the time of dropping it. Tuition refund will be issued for a dropped course according to the fee schedule stated in the Financial Obligations and Refunds section.

Holders of fellowships, assistantships, tuition and fee waivers, and student visas must maintain the required number of credit units or risk loss of their tuition and fee waiver for the term. Students who lose their waivers will be billed the full cost of tuition and fees.

Scheduling

Traditional Trimester Scheduling consists of an Academic Calendar of Spring, Summer and Fall Trimesters that span the calendar year. Applicants may apply for admissions into any of the three Trimester terms each year.

4. University Policies & Regulations

Student Code of Conduct

All students are expected to abide by ITU's Student Code of Conduct.

Note: The Student Code of Conduct applies to all students.

Article I: Terminology

1. The term "University" means International Technological University.
2. The term "student" includes all persons taking courses, receiving services from University, and pursuing graduate studies at University.
3. The term "faculty member" means any person hired by or contracted with the University to conduct instructional activities.
4. The term "ITU staff" means any person employed by the University, with the exception of student employees.
5. The term "member of the ITU community" includes students, faculty members or ITU staff, and or any other individual associated with the University. The Chief Student Affairs Administrator or designee shall determine a person's status in a particular situation.
6. The term "ITU Premises" includes all land, building, facilities and other property in the possession of or owned, used, or controlled by the University (including parking lots, adjacent streets and sidewalks)
7. The term "judicial body" means any person or persons authorized by the Chief Student Affairs Administrator or designee to determine whether a student has violated the Student Code of Conduct and to recommend imposition of sanctions.
8. The term "judicial Advisor" means an ITU official authorized on a case-by-case basis by the Chief Student Affairs Administrator or designee to impose sanctions upon students found to have violated the Student Code of Conduct. The Chief Student Affairs Administrator or designee may authorize a judicial advisor to serve simultaneously as a judicial advisor, and as the sole member or one of the members of the judicial body. Nothing shall prevent the Chief Student Affairs Administrator or designee from authorizing the same judicial advisor to impose sanctions in all cases.
9. The term "shall" is used in the imperative sense.
10. The term "may" is used in the permissive sense.
11. The "Chief Student Affairs Administrator or designee" is the person designated by the CEO of ITU University to be responsible for administration of the Student Code of Conduct.
12. The term "policy" is defined as the written regulations of the University.
13. The term "organization" means any number of persons who have complied with the formal requirements for University recognition / registration.

Article II: Judicial Authority

- 1.The judicial advisor shall determine the composition of judicial bodies and determine which judicial body shall be authorized to hear each case.
- 2.The judicial advisor shall develop procedures for administration of the judicial program and for the conduct of hearings, which are not inconsistent with provisions of the Student Code of Conduct.
- 3.Decisions made by a judicial body and / or judicial advisor shall be final. Pending the normal appeal process. (Unless otherwise is stated).

Article III: Proscribed Conduct

Jurisdiction of the University

The Code of Conduct applies to student behavior that affects the ITU community, irrespective of where that conduct may occur. Discipline may extend to off-campus activities and locations, when they adversely affect the ITU community and / or pursuit of its objectives.

Conduct - Rules and Regulations

Any student found to have committed the following misconduct may be subject to disciplinary sanctions outlined in Article IV.

- 1.Acts of dishonesty, including but not limited to the following:
 - a.Furnishing false information to any University official, faculty member or office.
 - b.Forgery, alteration or misuse of any University document, record or instrument of identification.
 - c.Computer piracy, including duplication of computer software, copyright infringement and unauthorized computer entry.
- 2.Disruption or obstruction of teaching, research, administration, disciplinary proceedings and other University activities, including its public service functions on or off campus, or other authorized non-University activities, when the act occurs on ITU premises.
- 3.Physical abuse, verbal abuse, threats, intimidation, and harassment including, but not limited to, sexual harassment, coercion and/or other conduct that threatens or endangers the health or safety of any person, either on ITU premises or at any University-sponsored activity.
- 4.Attempted or actual theft of and/or damage to property of the University or property of a member of the ITU community or other personal or public property.
- 5.ITU specifically prohibits any organization, chartered or otherwise, officially or in fact, from participating in the activity of "hazing".
- 6.Gambling on ITU premises, at University functions or through the use of University equipment.
- 7.Failure to comply with directions of University officials or law enforcement officers acting in performance of their duties and/or failure to identify oneself to these persons when requested to do so.

8. Unauthorized possession, duplication or use of keys to any part of ITU premises, or unauthorized entry to or use of ITU premises.
9. Violation of federal, state or local law on ITU premises or at University-sponsored or University-supervised activities, or other violation of federal, state or local law which has an adverse effect on the ITU community.
10. Violation of published University policies, rules or regulations.
11. Use, possession or distribution of narcotic or other controlled substances, except as expressly permitted by law, or being under the influence of such substances.
12. Illegal or unauthorized possession of firearms, explosives, other weapons or dangerous chemicals on ITU premises or at any University-sponsored activity.
13. Participating in a campus demonstration that disrupts normal operation of the University.
14. Conduct that is disorderly, lewd or indecent; breach of peace; or aiding, abetting or procuring another person to breach the peace on ITU premises or at functions sponsored by the University.
15. Theft or other abuse of computer time, including but not limited to:
 - a. Unauthorized entry into a file, to use, read or change contents, or for any other purpose.
 - b. Unauthorized transfer of a file.
 - c. Unauthorized use of another individual's identification and password.
16. Abuse of the judicial or disciplinary system, including, but not limited to:
 - a. Failure to appear before a judicial body or University official.
 - b. Falsification, distortion or misrepresentation of information before a judicial body.
 - c. Disruption or interference with orderly conduct of a judicial proceeding.
 - d. Attempting to influence the impartiality of a member of a judicial body prior to, and / or during the course of the judicial proceeding.
 - e. Harassment (verbal or physical) and/or intimidation of a member of a judicial body prior to, during and/or after a judicial proceeding.
 - f. Failure to comply with sanction(s) imposed under the Student Code of Conduct.

Article IV: Judicial Policies

Charges and Hearings

1. Any member of the ITU community may file charges against any student for misconduct. Charges shall be prepared in writing and submitted as soon as possible after the event takes place.
2. The judicial advisor may conduct an investigation to determine if charges have merit and/or if they can be resolved by mutual

consent of parties involved on a basis acceptable to the judicial advisor (such as mediation). Such disposition shall be final, and there shall be no subsequent proceedings.

3. All charges shall be presented to the accused students in written form. Chief Student Affairs Administrator or designee shall decide on how they want to follow up with the case. This could go up to an actual hearing.
4. It is up to the Chief Student Affairs Administrator or designee to decide on everything related to the charges brought up against the accused student.

Sanctions

1. The sanctions listed below may be imposed upon any student found to have violated the Student Code of Conduct.
 - a. **Warning** – A verbal or written notice to the student that the student is in violation of or has violated University regulations.
 - b. **Probation** – A written reprimand for violation of specific regulations. Probation is for a designated period of time and includes the probability of more severe disciplinary sanctions if the student is found to be violating any University regulation(s) during the probationary period.
 - c. **Fines** – Fines may be imposed, as determined or approved by the university.
 - d. **Restitution** – Compensation for loss, damage or injury. This may take the form of appropriate service and/or monetary or material replacement.
 - e. **Discretionary Sanctions** – Work assignments, service to the University or other related discretionary assignments.
 - f. **ITU Suspension** – Separation of the student from the University for a definite period of time, after which the student is eligible to return. Conditions for readmission may be specified.
 - g. **University Expulsion** – Permanent separation of the student from the University.
2. More than one sanction listed above may be imposed for a single violation.
3. Other than University suspension and University Expulsion, disciplinary sanctions shall not be made part of the student's permanent academic record, but shall become part of the student's disciplinary record.

Interim Suspension

In certain circumstances, the Chief Student Affairs Administrator, or a designee, may impose an immediate University suspension.

1. Interim suspension may be imposed:
 - a. To ensure the safety and well-being of member of the ITU community or preservation of University property;

- b. To ensure the student's own physical or emotional safety and well-being; or
 - c. To ensure safety of others if the student poses a definite threat of disruption of or interference with the normal operation of the university, all at the discretion of the Chief Student Affairs Advisor or designee.
2. During the interim suspension, student shall be denied access to ITU premises and / or all other University activities or privileges for which the student might otherwise be eligible, as the Chief Student Affairs Administrator or designee may determine to be appropriate.

Appeals

The accused student may appeal a sanction imposed. The request must be in writing and submitted within the timeframe outlined in the sanction notice. The Chief Student Affairs Administrator or designee may decide to uphold an appeal. Based on the nature of the case, he/she may decide to deny the appeal process.

Academic Grievance Procedures

An academic grievance procedure defines an administrative process through which students or employees may seek resolution of complaints or grievances arising from a decision made about them.

- *Informal Procedure*

A student or employee who has a complaint or request is expected to first resolve it informally. The effort must include discussions with the specific faculty member, teaching assistant or staff member involved. A demonstrated lack of good faith by any party attempting to resolve complaints informally may be considered with all other factors to reach an ultimate decision on the merits of any grievance.

- *Formal Procedure*

If all reasonable informal efforts to resolve a complaint fail, a student or employee may formalize it as a grievance. A formal grievance must be filed within 45 days from the time the student believes, or reasonably should have known, that an occurrence has effected his/her status. This period of 45 days includes all informal efforts to resolve the grievance. The student must submit the grievance in writing to the Administration Office. A proper administrator will conduct an investigation of the grievance and may interview the student for further clarification. After the investigation, the administrator may either grant or deny the redress sought or provide remedies. The decision will be issued no later than 14 days following receipt of the written grievance. If the administrator does not grant redress satisfactory to the student, the student has 14 days to appeal the decision to the University President upon written receipt of the appeal. The President has 14 days to notify the student of his decision, either grant or deny the

redress sought or provide other remedies. The President's decision is final. To launch a complaint via the Bureau of Private Postsecondary Education (BPPE) please visit the BPPE website (<http://www.bppe.ca.gov/>).

Academic Integrity

ITU is dedicated to learning and research, and hence is committed to truth and accuracy. Integrity and intellectual honesty in scholarship and scientific investigation are, therefore, of paramount importance. These standards require intellectual honesty in conducting research, writing of research results and relations with colleagues. Academic misconduct includes cheating, plagiarism, falsification of data, etc.

Academic Policies

Advising

All students must have an academic advisor. Advisors assist in planning a program of study that fits the needs of the student and satisfies program requirements. .

Auditing Classes

A student may audit almost any course offered by ITU. Auditing a class means that the student registers for a class as an "Auditor". The student is not required to complete course assignments, though he or she may do so with the permission of the instructor. The student does not receive a letter grade for the course. Instead a grade of "AUD" is entered in the student's record.

Classes taken for "Audit" do not apply toward any academic degree, and do not count as part of a student's full- or part-time course-load. The tuition for an audited course is the same as that for a credit course.

Registering to audit a class

Duration: A student may register to audit a course up to one week after the last day of late registration

Auditing limitations:

- Registration is limited to classes with space available
- Professor's permission
- Tuition and fees are the same as for credit

Class Attendance Policy

Class Attendance is mandatory for all courses. All classes conducted at ITU main campus have a mandatory in-class final examination or presentation.

Class Size Limit

Classes are limited to 75 students per weekday course, and 100 students per weekend course.

Conditional Admission

An applicant who has insufficient preparation in his or her intended graduate degree program, or who lacks certain supporting documentation required for unconditional admission, may be admitted conditionally to the graduate degree program upon recommendation of the Program Chair to the Director of Admissions.

Procedure

To recommend an applicant who does not meet minimum Graduate School standards, the department chair or the academic dean must:

1. Provide a written rationale for the conditional acceptance of the student.
2. Stipulate the conditions, including the time frame which the student must meet in order to be fully accepted.
3. Note the conditions on the planned program that is sent to the Admissions office.

After review of the material, the Academic Dean / Director of Admissions will write a letter of conditional acceptance to the student. The letter will state the conditions which must be fulfilled by the student and the time frame within which the conditions must be fulfilled. The letter will also state it is the responsibility of the student to notify the department and the Vice President of Student Affairs, in writing, when the conditions have been fulfilled.

If the conditions are not met within the stated time frame, the student will be notified that his or her conditional admission has expired and he or she is no longer a matriculated graduate student. Any conditions placed on the student's admission are included in the notification of admission. If conditions placed on admission are not met within the time specified and stated in the admission notice, the Dean will direct the Registrar to withdraw the student from the University. The student may petition for reinstatement.

Conditions placed on admission may include:

1. submission of test scores or other indicators of preparation for graduate study that are unavoidably lacking at the time of admission;
2. completion of additional coursework or other study to remove deficiencies, with such makeup work to be in addition to the regular degree requirements; and
3. completion of an additional 9 semester credit hours and the achievement of a minimum grade point average, in no case lower than that required for a student to remain in the University as a graduate degree-seeking or special graduate student, if the student's grade point average is less than that specified for unconditional admissions.

Confidentiality of Student Records

ITU fully complies with the Faculty Educational Rights and Privacy Act of 1974. This means ITU may release directory information, including name, address, phone number, and major field of study to any person on request unless a student requests in writing that directory information be kept confidential. ITU will safely keep student records for an indefinite period. Law from inspection excludes certain records: those created or maintained by a physician, psychiatrist, or psychologist in connection with student treatment or counseling. Students may inspect their records in the Office of Admissions and Records and direct academic record complaints to the Registrar.

Continuation and Probation Rules

Students are considered to be in good standing if they:

- Meet all admissions requirements
- Are not on academic probation
- Are making satisfactory progress towards degree requirements - including a project or thesis if required

Credit Hour Policy

Except as provided in Federal Regulation 34 CFR 668.8(k) and (l), a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

- (1)One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or
- (2)At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution, including laboratory work, internships, practice, studio work, and other academic work leading to the award of credit units.
- (3)Besides: One credit hour is assigned to a part time CPT in which the student needs to get between 10 to 20 hours training a week for at least 15 weeks; three credit units are assigned to a full time CPT in which the student takes 21 to 40 hours training per week for at least 15 weeks." In addition, given the nature of our school, many of our engineering classes meet in a laboratory of the subject matter these classes meet in accordance with the time requirements of the above policy. In addition to the class meeting time, which is largely lecture/didactic and discussion classes, students are required to complete additional lab work/assignments outside of their class hours. Most students take advantage of this by working hours in the specific labs, such as Artificial Intelligence, and / or AI Robotic Lab, which members of the recent WASC Visiting Team visited.

Grade Change Policy

After a grade has been assigned by the instructor, any change of the grade has to follow the Grade Change Policy below:

- A) The application for a grade change must be received by the instructor not later than the end of the trimester following the one in which the course was taken.
- B) The assignment of the contested grade is due to a clerical error of the instructor, for example: wrong summation of points, or clerical oversight of any student work that is used in the grade computation.

Grade change requests that contest the instructor's judgment of the academic quality of the student's work or achievement are disallowed.

Grade change requests that are based on makeup work of any type performed after the trimester in which the course was taken are disallowed.

Grade change requests that are based solely on the student's desire to have a better grade are disallowed.

If the above conditions **A)** and **B)** are met and the instructor decides to change the grade, the request must be submitted to the department chair for final approval. After this approval the registrar will effect the grade change in the students records.

Addendum:

If a student decides to take the same course again and achieves a better grade, the better grade will be entered in addition to the former grade in the student's record, but will not count as additional credit units toward the student's degree.

Grading System

The following grades are used:

A	4.0 grade points per credit hour
A-	3.7 grade points per credit hour
B+	3.3 grade points per credit hour
B	3.0 grade points per credit hour
B-	2.7 grade points per credit hour
C+	2.3 grade points per credit hour
C	2.0 grade points per credit hour
C-	1.7 grade points per credit hour
D+	1.3 grade points per credit hour
D	1.0 grade points per credit hour
D-	0.7 grade points per credit hour

F	0(failure: not accepted as degree credit hour)
I	Incomplete. Used only for reasons beyond student's control. An "I" that is not removed on the student's record as an "I", with no credit earned, and is not computed in the GPA.
P/NP	(Pass/Not pass)-Used as an alternative grading option for students. Not available for required core courses. Passing mark earns grade points towards graduation, but is not calculated in the GPA. No grade points are earned for the NP mark, and the grade is not computed in the GPA.
AUD	Auditing. No grade points are earned and the grade is not computed in the GPA.
NR	Used by the office of Admissions and Records to indicate no grade was reported.
WF	Failed the course at the time of withdrawal. No grade points are earned and the grade is not computed in the GPA.
WP	Passed the course at the time of withdrawal. No grade points are earned and the grade is not computed in the GPA.

Only courses in which a student has earned at least a grade of C- and P are counted towards the master's degree. All registered credit units are counted as attempted credit units, and all grades except I, P, NP, WP, WF, AUD and NR are used in GPA computation. A student must earn a cumulative 3.0 GPA to be eligible for the master's degree.

All courses require letter grades, except those specifically designated otherwise. For deficiency courses, a letter grade should be given, although not counted in the student's overall GPA. Grades of "C- " or better constitutes a passing grade for a deficiency course. All deficiency courses can be completed at any accredited institution.

Incomplete Grade Policy: Fall 2011

Incomplete grade is student initiated.

1. The purpose of an 'incomplete' ("I") grade is to give a student the chance of receiving at a later time a letter grade for a course for which the student has not finished all necessary work during the course time, or was prevented by special and unforeseeable circumstances from making proper progress.
2. A student who fulfills the condition (1.) is entitled to ask the instructor for an incomplete grade for the course. If the student so requests, the instructor can, but is not required to issue an "I" grade. Without such a request the instructor must not issue an "I" grade. (An "I" grade cannot be issued for Independent Study and for any class that has not been sufficiently attended by the student).
3. The student makes the request by filling out the Incomplete Grade Request (Petition) form and submitting it to the instructor before the date when the grades for the course are due. The form must contain the names of student and instructor, the number and name of the course for which the "I" grade is requested, and the description of the work, that must be completed to receive a letter

grade. The form must be dated and signed by student and instructor and is filed with the registrar.

4. A student who receives an "I" grade for a course must complete and submit the missing work within the following trimester to the instructor of the course or the instructor's TA.
5. If the missing work is submitted in time, the instructor's TA will check the submitted work for completeness and, if complete, will forward it to the instructor. The instructor will review the submitted work and will make the decision which letter grade the student should receive. This letter grade must not be higher than "B+". This letter grade is considered the final course grade and cannot be contested by the student.
6. If the student does not submit the missing work in time, the "I" grade changes to F.
7. Whatever the "I" grade changes to will replace the "I" in the student's record.
8. As long as a course grade is in the student's record as an "I", it counts toward the student's credit units, but is ignored in the calculation of the student's GPA.
9. A student must not have more than two "I" grades on his/her record at any time.
10. Students should be aware that the change of an "I" grade to an "F" can impact the student's status with respect to their visa.

Policy for Independent Study

Independent Study (IS) is a form of educational activity involving an individual instructor and an individual student in which the student conducts research on a mutually agreed upon topic under loose guidance from the supervising instructor. Usually an instructor will make it known to the University in which fields s/he is willing to guide independent study in a particular trimester.

A student who intends to register for and conduct independent study (IS) has to follow the rules described below.

1. The student applies for independent study with the Registrar. The registrar approves or denies the application dependent on condition a) listed below. If approved, the Registrar issues to the student the 'Outline of Independent Study' form.
2. With this form the student seeks approval for IS from the Department Chair of the student's major and suggests a supervising instructor. The Department Chair approves or denies the application dependent on condition b) listed below which is subject to the Department Chair's judgment.
3. If approved the Department Chair assigns the suggested or a different instructor as supervising instructor at his/her discretion.
4. The instructor and the student fill out the 'Outline of Independent Study' form, which contains the student's and instructor's names, the trimester in which the IS is to be conducted, the credit units to

be awarded, the topic of the IS, and the desired outcome. The maximum credit units for IS is 3. It can be reduced to 2 or 1 credit units by the supervising instructor at the preparation of the Outline form. The completed form is submitted to the Department Chair for approval.

5. Upon approval and signature of the Outline form by the Dept Chair the form is sent to the Registrar, who files it and makes the entry in the student's record, and LMS, as registered for IS.
6. IS must be conducted and completed in the trimester specified in the Outline form. Upon completion of the IS the instructor assigns a letter grade in compliance with the general grading policy. Assignment of Incomplete grade (I) is not allowed for IS.
7. Approval of Independent Study at ITU is subject to the following conditions:
 - a) No course is available in the schedule for the given trimester that counts for the student's degree as listed in the curriculum.
 - b) There is some hardship for the requesting student that makes the earning of additional credit units through IS a necessity (typically visa requirements, preceding loss of credits through disease etc.) If the situation of the requesting student is not deemed a hardship by the Department Chair, the application is denied.
8. The wish to gain more credit units than possible with the current course schedule, does not constitute a hardship.

Processes for review of assignment of credit

A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

1. One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or
2. At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practical, studio work, and other academic work leading to the award of credit hours.

All of which is determined by head of department through program review meetings and after final AQC approval.

Time Limits

All candidates for master's degrees must complete all the matriculation requirements within six calendar years after initial registration at ITU.

Transcripts & Grade Reports

In order to receive your Transcript or Grade Report, you must complete the following items:

- You must fill out a transcript request form and send it along with payment.
- If you pay through debit or credit card, you will need to fill out the appropriate authorization form and submit it with your transcript request to the Accounting Department.
- If you pay by check, you need to mail the form and check to ITU's mailing address. Check must be payable to "ITU".
- Once your payment is processed, it takes 3 business days to process the official transcripts.
- Student can view and print the unofficial transcripts by logging into: <http://lms.itu.edu>.
- Contact Gloria Dellaske (dgloria@itu.edu) for official transcripts.

Transferring Credits

Students who wish to transfer in credits from prior universities, must submit the request before they complete 19 units at ITU. Up to 9 units might be approved by the Department Chair.

Nonacademic Policies

Nondiscrimination Policy

ITU is committed to the most fundamental principles of academic freedom, equality of opportunity, and human dignity. This requires that decisions involving students and employees be based on individual merit and free from invidious discrimination of all forms, whether or not legally prohibited.

ITU's policy is to fully comply with applicable federal and state nondiscrimination and equal opportunity laws, orders and regulations. ITU will not discriminate in programs and activities against any person because of race, color, religion, sex, national origin, ancestry, age, marital status, handicap, unfavorable discharge from the military, or status as disabled veteran or veteran of Vietnam era. This nondiscrimination policy applies to admission, employment, access to and treatment in University programs and activities.

Complaints of invidious discrimination prohibited by university policy shall be resolved exclusively within existing ITU procedures.

Sexual Harassment Policy

Sexual harassment is legally defined to include any unwanted sexual gesture, physical contact, or statement that is offensive, humiliating, or interfering with required tasks or career opportunities at ITU. Sexual

harassment is prohibited under federal and state discrimination laws and the regulations of the Equal Employment Opportunity Commission.

ITU will not tolerate sexual harassment of students or employees and will take action to provide remedies when such harassment is discovered. The University environment must be free of sexual harassment in work and study. Appropriate sanctions will be imposed on offenders in a case-by-case manner to ensure ITU is free of sexual harassment. ITU will respond to every reported sexual harassment complaint.

Campus Policies

Animals on Campus Policy

Animals (dogs, cats, birds, other pets etc.) are not permitted on campus except for those animals that are specifically exempted by this policy such as service dogs. Specifically, animals are prohibited from being in offices, classrooms, hallways, and all other areas in any academic or administrative building.

Domesticated pets are permitted outside on campus grounds when leashed and properly attended at all times. The University reserves the right to require the individual with a leashed domesticated pet to present documentation from a veterinarian that the pet is in good health, has appropriate shots, and is in compliance with all applicable state and local health laws, especially in the case of a medical emergency related to the animal such as an animal bite.

Service Animals While Performing Duties

Service animals are permitted on campus-controlled property while they are performing tasks for the individual they accompany.

A service animal is an animal specially trained to perform one or more specific functions or activities of daily living for an individual with a documented disability. Service animals include guide dogs for those with visual or hearing impairments, or service dogs to perform tasks for the mobility-impaired (i.e. pulling a wheelchair or fetching dropped items).

Any animal being used as a service animal on campus should be controlled and should wear a harness or other identifying device to identify it as a service animal. In order for the University to help facilitate the use of a service animal on campus, employees using service animals on campus - must notify in advance if there is a need for a service animal during employment.

The University reserves the right to require the individual to present documentation from a veterinarian that the service animal is in good health and has appropriate shots and is in compliance with all applicable state and local health laws, especially:

when the service animal will be on campus when the service animal will be present on a regular basis in a classroom or employment setting on campus in the case of a medical emergency related to the animal such as an animal bite. The individual may be asked to present updated documentation annually. The University reserves the right to request documentation that the animal has been trained to act as a service animal.

Service animals may enter any building or classroom with the person they accompany. The individual with the service animal takes full responsibility for the needs and behavior of the animal. Animal waste must be picked up and disposed of properly.

The University designee will investigate any complaint that a service animal is disruptive or threatening. If it is determined that the animal is disruptive or threatening and acting outside the appropriate scope of its duties as a service animal, the individual will be instructed to remove the animal until the individual produces appropriate documentation indicating that sufficient training has taken place to bring the animal under control.

General Parking Policy

- Parking is provided for the use of faculty, executive and full time staff of the University. You must have completed a parking permit application to be able to use.
- Parking areas are not to be used for distribution, solicitation, benefit sales or other activities of a similar nature, by employees of the University.
- ITU has no liability for loss or damage to automobiles or their contents while parked on University premises.
- All vehicles shall be parked within the boundaries of a market stall. Vehicles are prohibited from sidewalks, lawn lanes, and other areas not designated for driving or parking. Exceptions are maintenance, contractors, and emergency response vehicles.
- The lack of a readily available designated parking space is not an excuse for a violation of any parking regulation. Any vehicle found to be in violation will be towed.
- Major vehicle repairs are not allowed on University property.

Special Parking Policy

- Drivers using parking designated for disabled persons must display a valid state issued placard, license plate, or other form of identification recognized by state or national authority.
- Reset parking key to let a second car in is prohibited. A \$17 penalty fee will be charged for the first time. Parking key will be permanently terminated if happens again, and the applicant will be prohibited applying for another parking key with Standard Parking.

- Parking key has to be used in full cycle. Exit gate will not up if parking key did not use when enter in. Do not try to exit when the gate is up without using parking key.
- It is staff and faculty own responsibilities to keep parking key in a safe and secure place at all times. A \$35 penalty fee will be charged for lost parking key.

Lost and Found Policy

International Technological University's Lost and Found is located at the Administration Office on the Second Floor. Items found are logged at the Administration Office and held until the end of the month. Unclaimed items will be donated to charity on the last day of the month in which they were found. If possible, the Administration Office will make every effort to contact the owner of an item by phone or email.

Exemptions to the Policy:

High value items are turned over to the San Jose Police Department on a daily basis. High value items include driver's licenses, state/federal identification cards, ATM/debit/credit cards, checks, checkbooks, wallets, cell phones, and high value electronic items. High value electronic items include but are not limited to laptops, iPods, and mp3 players

- Food and food/beverage containers turned into Lost and Found will be disposed of at the end of the day in which it was found.
- Any item deemed unsanitary will be disposed of immediately.

In order to claim an item in Lost and Found the owner must provide a physical description of the item and current photo ID. The owner will be required to sign the item out once ownership has been established.

Questions regarding Lost and Found items should be directed to the Administration Office.

Alcohol Policy

Since the consumption of alcoholic beverages is prohibited, alcoholic beverages may be consumed on University premises only during event being sponsored or hosted by a campus individual, university-recognized group, department, or office that get approval by the University President or an Executive Vice President. The event must operate within state and local laws as provided by the Department of Alcohol and Beverage Control (ABC).

It is the policy of ITU to maintain a drug-free workplace and campus. The workplace and campus are presumed to include all ITU premises where the activities of the University are conducted. The unlawful manufacture, distribution, dispensation, possession and/or use of controlled substances, or the unlawful possession, use, or distribution of alcohol is prohibited on the ITU campus, in the workplace, or as part of any of the University's activities.

For approval of the detailed protocol on serving alcohol on campus, all of the following conditions shall prevail:

- The chair of the event and other officers or representatives of the event sponsor (21 years of age or older) who will be present throughout the event, who will refrain from consuming alcoholic beverages
- The monitoring and serving of alcohol shall be under the direct supervision of the chair of the event and other representatives of the event.
- It is the responsibility of the department to ensure that no alcohol is distributed to persons under the age of 21. Alcohol will only be served to individuals who are 21 or older with a valid, government issued photo identification.
- If there will be attendees at the event who are under the age of 21 years, the event sponsor must have a plan in place to ensure that these guests will not be served alcohol, e.g., ID cards must be shown upon entering the venue and wristbands must be distributed.
- Self-service of alcohol is not allowed in any location on the campus.
- Anyone who looks to be under the influence of alcohol and unable to exercise care for one's own safety or that of others should not be served alcohol and the Office of Campus Operations may be notified if there are further questions or concerns.
- Event sponsor should note that they may also be held responsible for serving alcohol to persons who drive while intoxicated.
- Event sponsor are encouraged to reduce the consumption of alcohol at least 1 hour prior to the scheduled ending time of the event.
- No open containers of alcohol may be present on campus at any time. All alcohol must be served, opened, and disposed of by staff members who are over 21 years of age.
- Event sponsor must properly secure all leftover beverages
- Alcoholic beverages shall only be consumed in the approved designated area.
- Alcohol is not permitted to be served unless suitable Equally Attractive Non-Alcoholic Beverages (EANAB's) and food shall be made available at all functions when alcoholic beverages are served.

IF IMMEDIATE ASSISTANCE IS NEEDED OR AN EMERGENCY OCCURS, INFORM OFFICE OF CAMPUS OPERATIONS AND CALL 911.

IN ORDER TO OBTAIN APPROVAL TO SERVE ALCOHOLIC BEVERAGES ON CAMPUS, PLEASE FILL OUT THE FORM BELOW AND SUBMIT IT TO THE DIRECTOR OF CAMPUS OPERATIONS

5. Degree Programs & Requirements

Graduate/Master's Degree Titles and Specialization

Business Administration Department:

Degree Title: Master of Business Administration in Bio-Management

Major: Bio-Management

Department: Business Administration

Specializations: Clinical Research Management, Legal, Regulatory and Bioethics, Leadership

Degree Title: Master of Business Administration - Green MBA

Major: Green MBA

Department: Business Administration

Specializations: Environmental Management, Green Behavior, Biofuels, Solar Energy, Wind Power, Bioenergy, Energy Efficiency, Hydrology Source

Degree Title: Master of Business Administration in Healthcare Management

Major: Healthcare Management

Specializations: Service Delivery, Health Sector Innovation, Healthcare Company/Industry Structure

Degree Title: Master of Business Administration - Business Education

Major: Business Administration

Specializations: Teaching Business Education, Coordination Techniques, Vocational Education, Techniques of Assessment, Curriculum Design, Technology Education, Cooperative Learning Techniques.

Degree Title: Master of Business Administration

Major: Business Administration

Concentrations: Accounting, Enterprise Resource Planning, Finance, Human Resources, Hospitality & Tourism, Information Systems Management, International Business, Management, Marketing, General MBA, Global Executive Master of Business Administration (GEMBA)

Computer Science Department:

Degree Title: Master of Science in Software Engineering

Major: Software Engineering
Department: Computer Science
Specializations: IT Security, Software Testing, and Software Tools, Systems

Digital Arts Department:

Degree Title: Master of Science in Digital Arts
Major: Digital Arts
Specializations: Digital Filmmaking, Animation, Game Design, Acting, Performance, Business Marketing, Urban Architecture

Electrical and Computer Engineering Department:

Degree Title: Master of Science in Electrical Engineering
Major: Electrical Engineering
Department: Electrical Engineering
Specializations: VLSI, Digital Signal Processing, Circuits and Systems, Wireless Communication, Digital Communications

Degree Title: Master of Science in Computer Engineering
Major: Computer Engineering
Department: Computer Science
Specializations: IT Security, Computer Networking, Digital Systems

Engineering Management Department:

Degree Title: Master of Science in Engineering Management
Major: Engineering Management
Department: Engineering Management
Specializations: Managing Professionals, Product Strategy, Outsourcing Management, Product Marketing

Degree Title: Master of Science in Industrial Management
Major: Industrial Management
Specialization: Integrated Manufacturing, Engineering Economy, Applied Ergonomics, Production Control, Product Testing, Industrial Safety, Industrial Hygiene

Doctorate Degree Titles and Specialization

Degree Title: Doctor of Philosophy in Electrical Engineering
Major: Electrical Engineering
Specializations: VLSI Design, Digital Communication, Wireless Communications

Degree Title: Doctor of Business Administration
Major: Business Administration
Specialization: Accounting and Financial Management, Applied Computer Science, Business Administration, Global Management, International Business, Management, Management Information Systems, Marketing, Public Administration

Degree Title: Doctor of Philosophy in Consilience
Major: Interdisciplinary Sciences
Specialization: Natural/Social Sciences, Scholastic Cross-Fertilization

Business Administration Programs:

Masters of Business Administration in Bio-Management

In these days, the industry is in the process of transforming recent academic findings about our human genealogical structures into developing cures and medicines for various illnesses and diseases. Responding to this trend in industry, ITU has created a new focus of our Masters in Business Management. This MBA in Bio-Management will give students the same knowledge and skills as a traditional MBA program with an additional core focused in managing various aspects of the bio-tech industry.

ITU provides the highest quality of professional talent to teach the students the necessary skills of the field and to collaborate on real world problems in the bio-tech industry. Students who graduate with ITU's MBA in Bio-Management will be specifically suited for managing and auditing clinical trial studies, and the degree is also an excellent preparation for entering the bio-tech industry as an entrepreneur, a manager at a large scale multi-national enterprise, or any position in between.

Curriculum

To complete the Masters degree each student must complete a total of 36 trimester units.

Students pursuing a degree in ITU MBA Bio Management program will take 18 trimester units of core courses in the Bio Management concentration category listed below. In addition, they must take an additional 18 trimester units of ITU management Elective courses listed below.

To graduate with a Master in Bio Management degree, students should complete 24 trimester units of Bio concentration core courses, including BIO 920. The remaining 4 courses should be taken from the Management Electives Courses listed below.

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to find and solve common ethical and moral issues regarding clinical research.
- Understand various aspects of Bio Management environment, including legal, regulatory, political, social, and technical.
- Be able to write financial reporting and conduct Clinical Trials.
- Understand the protocol Development and Scientific Writing
- Understand the professional/leadership role in Bio environments.
- Know one's own professional values, potential career pathways, and Bio management role.
- Understand human behavior in Bio organizations, including the ability to lead and work in teams.
- Be able to effectively demonstrate verbal and written communication skills.
- Be able to apply and evaluate problem-solving methods and performance improvement techniques.
- Be able to demonstrate awareness of factors affecting Bio environment.
- Be able to apply knowledge from multidisciplinary resources to critically analyze current Bio management issues.
- Know the components of an Electronic Health Record, and other uses of Information Technology in Healthcare.

MBA - Bio-Management Requirements

The completion of at least 36 trimester credit units of graduate courses in the major field, 3 credit units of Joint Seminar and/or thesis or project, including:

- 18 credit units in MBA Bio-management, courses: BIOM 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 920, or other approved courses.
- 18 credit units from Bio and Management electives:
 - Bio Elective Courses: BPS 821; FPMP 920; HCM 904, 906, 907, 916, 927, 933
 - Management Elective Courses: ACTN 900, 910; CONS 900; ECON 920, FINN 933, GRN 511, 513, 514, 515, 597, 599, 923; MBAN 997, 998, 999; MGTN 901, 915, 923, 930, 945, 945W, 949, 950; MISY 915; MKTN 958

Masters of Business Administration – Green MBA

What is Green MBA?

International Technological University Green MBA program develops skills to handle financial, environmental and social implications of management decisions. Any department or section assigned to a Green MBA trained manager will be able to incorporate social and environmental costs of doing business in the work.

Curriculum:

Green MBA is a program which seeks solutions that foster financial viability, ecological balance and social integrity. Project development and hands-on experience is the method followed to develop entrepreneurial and leadership skills.

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to deal with everything from phasing foam cups out of the cafeteria to setting company-wide carbon reduction goals.
- Be familiar with the responsibility for developing the sustainability and environmental strategy.
- Understand and ensure compliance with all relevant contractual and Legal requirements for Environment and Sustainability.
- Be able to get tax benefits/ tax reduction on clean energy.
- Know how to make financial decisions in a transition more towards going green.
- Understand human behavior in organizations, including the ability to lead and work in teams.
- Be able to effectively demonstrate verbal and written communication skills.
- Understand and be able to apply a unique and powerful model of human behavior that is based upon how our brains are wired to interact socially.
- Be able to work more effectively as a manager, team member, and employee by the application of sound behavioral principles.
- Be able to achieve greater health, wellbeing, and happiness through better understanding and application of fundamental principles of behavior and motivation.

Green MBA Requirements

The completion of at least 36 trimester credit units of graduate courses, 3 credit units of Joint Seminar and/or thesis or project, including:

- 18 credit units in Green MBA courses: BIOM 909, EEN 977, FPMP 920, GMBA 900, 901, 902, 903, 904, 905, 906, 907, 908, 910, 911, 912, 913,

914, 920, 921, 922, 930, 931, 940, 950, 960, 970, 971, or other approved courses.

- 18 credit units from ITU MBA management courses:
 - Business Core Courses: ACTN 900, 910, ECON 920, FINN 932
 - Business Elective Courses: FINN 933, GRN 511, 513, 514, 515, 597, 599, 920, 922, 923, MBAN 997, 998, 999, MGTN 901, 915, 921, 923, 930, 942, 943, 945, 945W, 946, 948, 949, 951, 952, 954, or other approved courses.

PLEASE NOTE: Only one course from any ITU programs will be counted in the curriculum of the Green MBA Program

Master of Business Administration in Healthcare Management

International Technological University offers typical coursework in the Healthcare Management program, which includes topics such as accounting, marketing, finance, law and management as they relate to the healthcare industry. Qualified healthcare managers are in increasing demand for positions such as Health and Social Service Manager, Patient Accounts Supervisor, Home Healthcare Manager, Health and Safety Manager, Health Information Manager, and Health Services Manager.

Curriculum:

The MBA Healthcare Management program builds on the established strength of the management skills to provide expertise in the unique elements and issues of the healthcare industry. ITU healthcare program is well-qualified to respond to the many critical problems now faced by hospitals, government agencies, group practices, pharmaceutical and biotechnology firms, insurance and managed care organizations, and consulting firms. Healthcare majors benefit from an interdisciplinary faculty based in the business, medical, and nursing schools.

Program Learning outcomes:

Upon completion of this program, graduates will:

- Be able to make ethical decisions about healthcare issues.
- Understand various aspects of a healthcare environment, including legal, regulatory, political, social and technical.
- Understand the professional/leadership role in health environments to improve the quality of health.
- Know the healthcare laws and regulations in order to proactively follow them.
- Know one's own professional values, potential career pathways, and healthcare role development opportunities.
- Understand the structure of healthcare delivery and finances.

- Understand the human behavior in healthcare organizations, including the ability to lead and work in teams.
- Be able to effectively demonstrate verbal and written communication skills.
- Be able to apply and evaluate problem-solving methods and performance improvement techniques.
- Be able to demonstrate awareness of factors affecting health, including culture, age, gender and socio-economic status.
- Be able to assume a professional/leadership role.
- Be able to apply knowledge from multidisciplinary resource to critically analyze current healthcare issues.
- Know the components of an Electronic Health Record, and other uses of Information Technology in Healthcare.

MBA - Healthcare Management Requirements:

The completion of at least 36 trimester credit units of graduate courses and/or thesis or project, includes:

- 18 credit units in MBA Healthcare core courses: FPMP 920; HCM 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 926, 927, 930, 931, 932, 933, and 934, or other approved courses.
- 18 credit units in MBA Healthcare elective and management concentration courses, project or thesis upon approval by the advisor.
 - Healthcare Elective courses: BIOM 900, 901, 902, 903, 905, 907, 908, 909, 912, 914, 915; BPS 821; or other approved courses.
 - Management Concentration courses: ACTN 900, 910; CONS 900; ECON 920; FINN 933; GRN 511, 513, 514, 515, 597, 599, 923; MBAN 997, 998, 999; MGTN 901, 915, 923, 930, 945, 945W, 949, 950, 951; MISY 915; MKTN 958; or you can choose a project or these. All courses, projects, or theses can be selected upon approval by the advisor.

Master of Business Education

A master's degree in Business Education from ITU is accomplished in concert with the core MBA program. In keeping with the technology focus of the University, the Bus Ed program includes emphasis on both education and business expertise. Students engaged in the ITU Bus Ed program will obtain their degree by taking classes through the core MBA subjects rounded out by learning in educational technology, program assessment/review, research techniques, vocational, occupational training and more.

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Understand core business practices involving management, finance, business communication and product marketing. Be familiar with various aspects of a business environment, including legal, regulatory, political, social, and technical.
- Know the theoretical and practical skills required to use and teach with education technology-based tools.
- Understand how to conduct a needs assessment for training or teaching.
- Understand how to create a curriculum project that includes technology (media, internet, e-learning, or computer-based tools)
- Understand about individuals' different learning pathways
- Understand the principles behind instructional design.
- Be able to effectively demonstrate excellent communication skills such as good speaking, writing and presenting of information.
- Be able to apply quantitative and qualitative analysis.
- Know about research methods in education.
- Be able to demonstrate five aspects of education: design, development, utilization, management and evaluation.
- Be able to demonstrate multicultural awareness.
- Be able to assume a leadership role.

Master of Business Education Requirements

The completion of at least 36 trimester credit units of graduate courses, 3 credit units of Joint Seminar and/or thesis or project, including:

- 12 credit units in courses: ACTN 900, 910, ECON 920, FINN 932, 933, GRN 511, 513, 514, 515, 597, 599, 920, 921, 922, 923, MBAN 997, 998, 999, MGTN 901, 915, 945, 951, 953, MKTN 958, or other approved courses.
- 6 credit units core courses: EDBS 900, 901, 902, 903.
- 18 credit units Professional Education courses: EDBS 910, 911, 912, 913, 914, 915, 916, 920, 922, 923, 924, or other approved courses.

PLEASE NOTE: Only one course from any ITU programs will be counted in the curriculum of the Business Education Program

Master of Business Administration

The MBA is designed as a balanced preparation for managerial careers in business. Its purpose is to prepare students for responsible positions in a rapidly changing world; to develop an attitude of intellectual curiosity to foster a program of continuous learning throughout life; and to study management as a unique function applicable to all types of endeavors which involve the coordination of people and material resources toward given objectives.

The program provides the students a solid foundation in Accounting, Economics, Finance, International Business, Management, and Marketing that will be as valuable ten years from now as it is today. The University's location in the heart of Silicon Valley provides its MBA students with exposure to the unique entrepreneurial success in this region. The MBA faculty has many years of experience in starting companies, managing corporations, directing advanced product development, and consulting for major companies.

The MBA program requires successful completion of 36 trimester units. The program offers concentrations in different disciplines, such as Accounting, Finance, Human Resources, Management Information Systems, International Business, Management, Marketing, in addition to the Executive Master of Business Administration (EMBA), General MBA, and Enterprise Resource Planning (ERP). Concentration and elective courses provide flexibility in customizing the program to meet professional and personal goals.

To be admitted to the MBA program, the students should possess an undergraduate degree. If the undergraduate degree is in the area of business administration or a related field, then a minimum grade point average of 3.0 is required for the last half of courses taken that count for the degree. If the undergraduate degree is in a different field, then the minimum grade point average required for all courses in that degree is 3.0. Exceptions to these requirements can be made by the academic council.

Students who don't have an undergraduate degree, or have a degree from a discipline other than business, but are otherwise qualified may be admitted as unclassified. These students must complete the missing necessary coursework to become candidates. During this time they are officially considered graduate students in the University.

Notes:

- 1.Note: Only one course from any ITU programs will be counted in the curriculum of the MBA Program (e.g. Web Graphic Design, Software Testing, or any other course upon the advisor's approval.)
- 2.Note: Project/Independent study. The student is allowed to take up to 9 credits (exceptions to this requirement can be made by the department chair):
 - a. 3 independent study topics (GRN 921, 922, 923), OR
 - b.2 independent study topics (GRN 921, 922, 923), and 1 project (3 credits), OR
 - c.1 independent study topic (GRN 921, 922, 923), and 1 project (6 credits).

3.Note: Students who are on CPT should take the Independent study GRN 921, 922, or 923. For the students who are not on CPT, ONLY one independent study course is counted in the degree.

4.Note: The students who take major concentration courses from concentrations other than their field of study, the completed courses will be considered electives.

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to make ethical decisions in a business context.
- Understand various aspects of a business environment, including legal, regulatory, political, social, and technical.
- Be able to write financial reporting and conduct market analyses.
- Be able to survey the evidence and the psychology to examine theories of financial markets with an eye towards identifying boundaries and opportunities for new research.
- Know how to operate a business in the international arena with awareness and sensitivity to foreign cultures.
- Understand the creation and distribution of goods and services.
- Understand human behavior in organizations, including the ability to lead and work in teams.
- Be able to effectively demonstrate verbal and written communication skills.
- Be able to apply quantitative and qualitative analysis.
- Be familiar with current technologies.
- Be able to demonstrate multicultural awareness.
- Be able to assume a leadership role.
- Know integrative and cross-functional pedagogy, linking business theory with business practice, to critically analyze current problems.
- Know how to customize SAP on business modules.

MBA Concentration Requirements:

- Unclassified students must complete 27 credit units in the following business courses with a minimum “B” average: BUS 400, 410, 411, 412, 413, 414, 415, 416, and 417, or other approved courses.
- 6 credit units in core courses: ACTN 900, 910; ECON 920; FINN 932 or other approved courses.
- Credit units for MBA Concentrations:
 - Individual Concentrations – 6 or 12 credit units of concentration courses:
 - Accounting – ACTN 920, 921, 923, 924, 925, 927;
 - Finance – FINN 916, 920, 921, 930, 933, 934, 935;

- Hospitality & Tourism Management – HTM 900, 901, 902, 903;
- Human Resource Management – HRMG 940, 941, 943, 944, 945;
- Information System Management – MISY 910, 911, 912, 914, 915, 921, 926;
- International Business – INBS 910, 911, 912, 915;
- Management – MGTN 901, 943, 944, 946, 948, 949, 950;
- Marketing – MKTN 950, 951, 952, 954, 958, 960
- *Or other approved courses.*
- Hospitality & Tourism Management Students – 21 credit units of concentration courses:
 - HTM 910, 911, 912, 913, 914, 915, 916, 917, ECON 920, FINN 933, GRN 511, GRN 515, 599, 920, 921, 922, 923, HRMG 940, INBS 910, MBA 997, MGTN 901, 921, 923, 930, 942, 945, 948, 949, 952, 954, MISY 915, MKTN 958, or other approved courses
- Enterprise Resource Planning (ERP) Program – 12 credit units concentration courses:
 - ACTN 920, 925+; ERP 901+, 902+, 903, 904, 905+, 906, 907+, 908, 910, 911, 912+, 913; MGTN 930; MKTN 952, 965

Courses with (+) are courses recognized by the ITU/SAP University Alliance.
- 18 credit units, or 9 credit units for Executive MBA in elective courses*: ACTN 926, 928 A/B, 929, 930, 940, ACTN (CPA Exams) 991, 992, 993, 994; CONS 900; ECON 921, 922, 923; FINN 917, 918, 931, 936, GRN 511, 513, 514, 515, 597, 599, 923; HRMG 942, 946, 947, 948; INBS 913, 914, 921, MBAN 997, 998, 999, MGTN 915, 920, 922, 923, 925, 930, 935, 941, 942, 945, 945W, 947, 951, 952, 953, 954; MISY 913, 920, 925, 930; MKTN 955, 956, 959, 961, 965; PMGT 900; or other approved courses.
- 3 credit units of Curricular Practical Training (for students on CPT): GRN 920, 921, 922

***Elective courses that are specific to a particular concentration are considered “Elective Concentration Courses”. For example, MTKN 915 is considered to be an “Elective Concentration Course” for Marketing concentration students, but as a regular elective course for all other concentrations. Students may choose to take none, or a maximum of two “Elective Concentration Courses” to replace regular elective courses.**

General MBA Requirements:

- 6 credit units in core courses
- 3 credit units in joint seminars

- 27 credit units from Major concentration courses, or Elective courses.

Global Executive Master's of Business Administration

Team-based Learning

Students in the Global MBA will carry out assignments in each module in teams of four to seven individuals. The team experience is designed to enhance leadership and communication skills among students and encourages them to bring their current challenges from their work environment into classes where teams and faculty work together on finding solutions and strategies for real problems. Participant teams will also be developing their own plans for an internationally focused business, product, or enterprise during each of the modules, applying learning and skills from that module to the development of the team's project. Students will share with each other project development related leaning during each module. A formal presentation of the Team's completed project will be made at the beginning of the summer term, as part of the International capstone.

GEMBA Structure

The Program's content and schedule are different from the established full-time MBA program. It is developed for the needs of professional senior, and managers. The difference from the full-time MBA is due to:

- An extensive variety of courses
- Condensed Courses

The GEMBA students are professionals with at least 5 years of experiences. Being at executive level, the students already have many managerial and leadership skills. Upon completing this program, the students will have the opportunity to build and earn more professionals skills and competencies. To measure the student sills, a pre- and post-skills approach will be applied.

Due to the nature of program, which is based on team-based learning, the GEMBA program will apply the cooperative and collaborative Learning approach. Having the cooperative learning structure will help the students work together in small groups on a prepared activity. As the final module is a presentation of the teams' final project, the collaborative learning approach is applied where each team will work on a project to present their study during the program.

The GEMBA program is an efficient and inclusive MBA program. It is not less than the full time MBA program. It blends learning methodology. Each course is 48 hours learning process (30 hours face-to-face / on campus, 2 hours online course introduction at the beginning of the course, 13 hours individual works and 3 hours take home final exams). The GEMBA requires residential work, known as "modules", and overseas field trips.

Students should complete 36 units in one year. The program consists of 5 modules residential work and one module field trip and a project presentation. Each module consists of two courses, 3 credits each course, for a total of 6 units to be completed in two months. Each course will be completed in one month. Students meet during the first week of the month, where classes are held on campus on Fridays, Saturdays and Sundays (10:00am to 8:00pm) for a total of 30 hours.

GEMBA Curriculum

The student must complete:	36 credit units
Modules (1-5)	30 credit units
Overseas Field	3 credit units
Team Project	3 credit units

The student must complete:

10 of the GEMBA courses equivalent to Modules (1-5) for a total of 30 credit units

- **Module One: Global And Business Sustainability – 6 credit units**
 - Month 1
 - GEMBA 900 Managing and Competing in the Global Environment (3)
 - Month 2
 - GEMBA 901 Sustainable Business Management in the Global context (3)
- **Module Two: Entrepreneurship And Venture Initiation – 6 credit units**
 - Month 3
 - GEMBA 910 Agile Project Management (3)
 - Month 4
 - GEMBA 911 Effective Venture Management in a Multi-Cultural Environment (3)
- **Module Three: Strategic Marketing And Planning – 6 credit units**
 - Month 5
 - GEMBA 920 Integrated Marketing and Communication (3)
 - Month 6
 - GEMBA 921 Strategic Planning in Branding and Advertising (3)
- **Module Four: Financial Analysis And International Economics – 6 credit units**
 - Month 7
 - GEMBA 930 Portfolio Management and Financial Analysis (3)
 - Month 8
 - GEMBA 931 International Economics (3)

- **Module Five: Global Management Intelligence And Information System – 6 credit units**
 - Month 9
 - GEMBA 940 Global Business Intelligence (3)
 - Month 10
 - GEMBA 941 Knowledge and Information Management (3)

- Two Capstone courses, equivalent to Module 6 for a total of 6 units
 - **Module Six: International Capstone and Project Presentation.....6**
 - Month 11
 - GEMBA 950 Overseas Study Tour: China (3)
 - Month 12
 - GEMBA 990 Capstone/Team Project Presentations (3)

Doctor of Business Administration

The degree of Doctor of Business Administration (DBA), offered by the International Technological University (ITU), is a research doctorate that focuses upon business practice. The DBA is a professional doctoral program intended for Executives, Managers, Consultants, and Instructors of business who want to expand their knowledge, and skills. The program develops the skills to analyze, practice, and research to equip the students with an understanding of both management practices, and of real-world business principles and thoughts. As an international business school, ITU bridges the gap between learning and its application.

ITU offers the DBA in 10 distinct topic areas including:

- Accounting and Financial Management
- Applied Computer Science
- Business Administration
- Global Business Sustainability
- Management
- Management Information Systems
- Marketing
- Organizational Behavior
- Public Administration
- Strategy and Innovation

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Understand research design and methods necessary to undertake a doctoral-level research project.

- Be able to design, implement, and evaluate a major research project dealing with business and managerial issues in the context of effectively managing technology, innovation and change in a business environment.
- Be able to demonstrate the capacity to conduct original research and to apply, test, and/or examine ideas, whether they're own or those of others.
- Understand the relationship between own research theme, associated literature and business knowledge.
- Be able to achieve a greater level of effectiveness as a professional practitioner in managing technology, innovation and related organizational change.
- Be able to perform an academic research, leading to publication of work in refereed journals.
- Understand the research methodology, and data gathering process.
- Understand the research and writing skills with high-level of responsibility in the academic and business environments.

Advisory Committee

To guide students through the first phase of the degree program, an advisory committee of at least three faculty members with appropriate terminal degrees will be assigned. The advisory committee also may serve as the Dissertation Committee.

DBA Requirements

The completion of at least 42 credit units of graduate courses in the major field of study, 18 credit units of dissertation, including:

Curriculum for Doctor of Business Administration:

- 9 credit units in core courses: DBA 900, 901, 902, or other approved courses
- 15 credit units in business core courses: DBA 910, 911, 912, 913, 914, 915, 920, 930, 940, 950, or other approved courses
- Qualifying Examination
- 18 credit units from the elective courses: DBA 810, 811, 812, 813, 814, 815, 816, 817, 820, 821, 822, 823, 824, 825, 830, 831, 832, 833, 834, 835, 836, 840, 841, 842, 843, 844, 845, 846, 847, 850, 851, 852, 853, or other approved courses.
- 18 credit units of dissertation research projects, including 3 credit units of dissertation defense: DBA 990.

Computer Science Programs:

Master of Science in Software Engineering

“The establishment and use of sound engineering principles (methods) in order to obtain economically software that is reliable and works on real machines” [Bauer 1972].

“That form of engineering that applies the principles of computer science and mathematics to achieving cost-effective solutions to software problems.” [CMU/SEI-90-TR-003]

“The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software” [IEEE 1990].

Software Engineering is an established discipline that comprises requirement analysis, design, construction, testing, as well as the economics, and management issues of the creation and maintenance of software. A Software Engineer has the special knowledge and skills necessary to develop and maintain large, complex software systems. A Software Engineer approaches all of these problems in a pragmatic and organized way and is concerned with the theoretical and practical aspects of technology, cost, and social impact of effective and efficient software.

Degree programs in software engineering have many courses in common with computer science. However, when it comes to techniques concerned with the reliability of software and with developing and maintaining software that is correct from the start of its development, the engineering knowledge and experience provided in SE programs go beyond what general CS programs provide. It is considered a necessity by many professionals and educators in the SE field that students of SE should participate in the development of software to be used in earnest by others.

ITU’s curriculum for a MSSE is concerned with the technical and management issues of SE, but primary emphasis is placed on the technical aspects of building and modifying high quality software systems. It thus allows the students to prepare for careers in businesses that build and sell computers and/or software, in Internet based companies, electronic business organizations, diverse research and development laboratories, aerospace companies, banks, and insurance companies. The development of this graduate curriculum has taken the recommendations of the Joint Task Force on Computing Curricula of the IEEE Computer Society and the Association for Computing Machinery of August 2004 into consideration.

An undergraduate degree is required for admission. If the undergraduate degree is in the area of computer science or a related field then a minimum grade point average of 3.0 is required for the last half of courses taken that count for the degree. If the undergraduate degree is in a different field then the minimum grade point average required for all courses in that degree is 3.0. Exceptions to these requirements can be made by the academic council.

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to apply SWEBOK principles and methodologies.
- Be able to apply object-oriented methodology for software design and other programming paradigms, such as aspect-oriented methodology, functional decomposition, etc.
- Understand the software life cycle.
- Understand the importance of requirements-gathering and clear requirements-specification.
- Understand the importance of developer/customer interaction.
- Be able to choose a proper software development model (e.g., agile development, extreme programming, RAD, etc.).
- Be able to master at least one design language (e.g., UML).
- Be able to apply various testing strategies (e.g., white box, black box, integration testing, etc.).
- Know how to avoid software development pitfalls.
- Be able to apply important management principles in the context of software development (i.e., leadership, managing human resources, managing the project and the process as a whole).
- Know one or more important programming languages (e.g., C++, Java, PHP, Python, Ruby, etc.).
- Know essential computer science topics, such as searching, sorting, hashing, trees, B-trees, lists, stacks, queues, and RSA encryption.
- Understand computational complexity (e.g., Big-O runtime order, NP-completeness, etc.).
- Know the inner-workings of a relational database.
- Be able to design, program, and manage a database.
- Understand the essential requirements of a user-friendly graphical user interface (GUI).
- Be able to design a user-friendly GUI.
- Understand 3-D graphics concepts.

MSSE Requirements

The completion of at least 36 trimester credit units of graduate courses in the major core field, 3 credit units of Joint Seminar and/or thesis or project, includes:

- 6 credit units in Software Engineering core courses: CEN 966, SEN 920, 941, 942, 944, 946, 950, 956, 986 or other approved courses
- 3 credit units in Applied Mathematics core courses: AMN 910, 912, 920, 921, 922, 930, 940, 950, 952 or other approved courses
- 24 credit units of project or thesis upon advisor approval: SEN 996, 998, 999, or following electives: CEN 940, 943, 951, 956, 960, 965, 966, MISY 915, SEN 903, 905, 909, 911, 930, 935, 954, 957, 958, 961, 962, 964, 965, 966, 967, 968, 970, 982, 985, 991, 992 or other approved courses
- 3 credit units in Joint Seminars or CPT-Independent Study:

- Joint Seminars: GRN 597
- CPT-Independent Study: CPT 993, 994, 995

Digital Arts Programs:

Master of Science in Digital Arts (MSDA)

Background

Digital Arts (DA) is a relatively young discipline that is developing and evolving rapidly. Emerging mere decades ago, DA was accessible only by the largest corporations, studios and universities. Today, DA touches the daily lives of individuals in the form of public, private and personal media. The appetite for content and creators is insatiable.

Definition

What constitutes or falls under the umbrella of DA? In the simplest and broadest definition, Digital Arts consists of all works produced and consumed in part or completely in the digital medium. Digital Arts is the intersection of art, science and commerce. The knowledge, discipline and technique required to produce such works include utilizing analog and digital tools with an eye toward societal responsibility and impact. The intense use of computer techniques in the art fields has not only influenced and changed the way in which former art activities are conducted, but also created totally new areas and techniques of art. Since the term Digital Arts covers a vast and hugely varied field of modern art activities, it must be considered an umbrella term for artistic work that uses computers and digital media in any way.

Curriculum

The Master of Science in Digital Arts (MSDA) is a two-year academic program that leads to the MSDA degree. The development of ITU's graduate curriculum for the MSDA incorporates and includes the experience of international film, video game and digital media productions from Silicon Valley and Hollywood.

The ITU MSDA curriculum is focused on providing students with the required technical and artistic design skills to succeed in the international markets and industries. Students will be exposed to and become familiar with the underlying technical, scientific, and algorithmic knowledge; production management; industry application; global and local cultural significance; exposure to visiting professors who are experienced international industry professionals; intense training in labs with industry projects and mentors. Students will learn to work in live action, animation, virtual and interactive media. The program thus prepares students for careers in state of the art DA production, advertisement, movies, game development, and mobile and Internet media applications.

An additional driving force in the development of this curriculum is the intent to inspire creativity and cultivate skills that are in high industry demand by training them for active professional productions of major commercial studios. Recent and current examples include projects Film Group where students were active professionals in Disney and China Film Group projects. In addition, ITU's Research & Development programs are in partnership with major world-wide universities, institutions and companies. Current R&D projects and programs include partnerships with Beijing University and Tsinghua University supervised by Google and Intel research executives.

It is the vision and drive of ITU's MSDA curriculum to truly balance the practical and the academic needs of the world's digital arts industries and markets. ITU's MSDA graduates are not only prepared to participate in today's digital arts fields, but also to create and lead the industry into the future.

Prerequisites

An undergraduate degree is required for admission. If the undergraduate degree is in the area of computer science, digital arts or a related field then a minimum grade point average of 3.0 is required for the last half of courses taken that count for the degree. If the undergraduate degree is in a different field then the minimum grade point average required for all courses in that degree is 3.5. Exceptions to these requirements can be made by the academic council.

MSDA Requirements

- 18 credit units in Digital Arts core courses: MMM 810, 830, 909, 910, 911, 920, 930; SEN 991, 993; or other approved courses
- 3 credit units from Applied Mathematics: AMN 910, 912, 952; or other approved courses
- 3 credit units from Joint Seminar: GRN 597
- 12 credit units from Digital Arts Elective courses: SEN 910, 956, 957, 958, 965, 991, 992; or other approved courses
- 3 credit units from Master's Thesis courses: MMM 826, 840, 841, 998, 999; or other approved courses

Electrical Engineering Programs: Masters of Science in Electrical Engineering

The Electrical Engineering degree program currently focuses in the following areas: *VLSI Design, Analog & RF IC Design, Digital Signal Processing & Communications, Computer Network & Systems Engineering*, leading to the degree of Master of Science in Electrical Engineering

(MSEE). Its purpose is to prepare students for career in industry, research or education.

Program Student Learning Outcomes:

Upon completion of this program, graduates will be able to:

- Understand fundamentals of mathematics, science and engineering
- Understand design specifications to analyze and solve engineering problems
- Implement a design specification toward a complete engineering solution by applying mathematics, science, and engineering knowledge
- Have professional and ethical responsibility in the accomplishment of engineering tasks
- Apply economic engineering solutions
- Communicate significant technical information in a clear, concise manner
- Understand and identify various customer needs
- Work productively and successfully in teams
- Enhance engineering skills through experimentation, discovery, and verification of ideas and concepts

MSEE Requirements

The completion of at least 36 trimester credit units of graduate courses in the major field of study, including:

- 9 credit units in Electrical Engineering core courses: EEN 901, 902, 906 (974), 908, 910, 915, 941, 948, 961 or other approved courses
- 6 credit units in Specified Field courses:
 - VLSI Design – EEN 904, 905, 911, 912, 913, 920, 921, 922, 923, 924, 925, 927, 928, 929, 938 or other approved courses
 - Analog & RFIC Design – EEN 903, 916, 917, 918, 919, 930, 931, 932, 933, 934, 935, 936 or other approved courses
 - DSP & Communication – EEN 962, 963, 965, 970, 971, 972, 973, 974, 975; CEN 956, 965, 966 or other approved courses
 - Computer Network & System Engineering – EEN 940, 942, 943, 951, 952, 953, 958, 960, 964, 966, 977; CEN 935, 940, 951; SEN 920 or other approved courses
 - Applicable to All Fields – EEN 995, 996, 998, 999 or other approved courses
- 6 credit units of Applied Mathematics courses: AMN 910, 912, 920, 921, 922, 930, 940, 950, 952 or other approved courses
- 3 credit units in Joint Seminars or Writing & Composition:
 - Joint Seminars: GRN 997

- 3 credit units of **Curricular Practical Training (CPT)** – Exceptions can be granted by the department chair, in which case the missing credit units must be made up with electives.
 - CPT 993, 994, or 995
- 9 credit units of electives with advisor’s approval

Masters of Science in Computer Engineering

“Computer engineering is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science and electrical engineering.” (Definition of Computer Engineering in the October 2004 Curriculum Report of the IEEE/ACM task force on Computing Curricula).

ITU’s curriculum for a MSCE is a blend of certain Computer Science and electrical Engineering courses. This reflects the fact that computer engineers are partly programmers and partly computer hardware designers. They are not electronics engineers as their design work is ALWAYS related to the computer. The computer, on the other hand is ALWAYS a program driven device. Typical areas, where this blend is applied and for which ITU prepares the students include ASIC design, FPGA development, firmware development, hardware-firmware integration, and circuit design. The development of this graduate curriculum has taken the recommendations of the above cited IEEE/ACM task force into consideration.

Curriculum:

Below are listed the required and elective courses for the MSCE curriculum together with the prerequisites, if any. The course contents together with prerequisites, if any, are listed in the appendix. The number of courses specified below are in the minimum in each category. If a student chooses more than the minimum in one category s/he can choose fewer in another category, but can never go below a minimum.

Program Learning Outcomes:

Upon completion of this program, graduates will be able to:

- Design analog and digital circuits
- Write “hardware-close” programs
- Understand digital signal processing and digital circuits
- Understand computer architecture and organization, hardware/software integration, and human/computer interaction
- Understand computer operating systems and embedded systems
- Understand Unix operating system

- Understand the nature and behavior of algorithms
- Apply programming and software engineering fundamentals
- Be familiar the database system
- Have awareness of societal impacts and professional responsibilities

MSCE Requirements

The completion of at least 36 trimester credit units of graduate courses in the major core field, 3 credit units of Joint Seminar and/or thesis or project, includes:

- 6 credit units in Computer Engineering core courses: CEN/EEN 951, 948; CEN 951; EEN 910; SEN 920, 956 or other approved courses
- 6 credit units in Applied Mathematics core courses: AMN 910, 912, 920, 921, 922, 930, 940, 950, 952 or other approved courses
- 18 credit units of project or thesis upon advisor approval: CEN 998, 999, or following electives: CEN/EEN 908; CEN 911, 921, 940, 941, 942, 948, 953, 954, 956, 960, 961, 962, 964, 965, 966, 996, 998, 999; EEN 912, 913, 940, 943, 960, 971; MISY 915; SEN 909, 911, 930, 932, 941, 953, 957, 958, 961, 963, 964, 965, 966, 970, 982, 985, 991, 992 or other approved courses
- 3 credit units in Joint Seminars
 - Joint Seminars: GRN 597
- 3 credit units of **Curricular Practical Training (CPT)**
 - CPT 993, 994, or 995

Doctor of Philosophy in Electrical Engineering

Application:

Student who completed his/her master degree in the subject field with GPA 3.0 or above is eligible to apply for the PhD program.

Thesis Advisor:

It is the student's responsibility to obtain consent from a full-time faculty member in the student's major department to serve as his/her prospective thesis advisor.

Students are required to find a thesis advisor as soon as possible after being accepted as a PhD student.

The student and the thesis advisor jointly develop a complete program of studies for research in a particular area. The complete program of studies (and any subsequent changes) must be filed with the Graduate Services Office and approved by the student's advisor.

Course Work and Study Program:

The students are expected to complete a minimum of 60 trimester units of graduate credit beyond the master's degree. Of these, 30 trimester units may be earned through course work and independent study and 30 through the thesis. All thesis units are graded on a Pass/No Pass basis. A maximum of 15 trimester units may be transferred from other accredited institutions at the discretion of the student's advisor.

Comprehensive Examinations:

After completion of the formal course work approved by the Doctoral Committee, the student shall request for comprehensive examination. The examination shall be a written exam representing sufficient, in-depth for advanced research in the major.

The comprehensive examinations normally must be completed within four years from the time of admission. Comprehensive examinations may be repeated only once, in whole or in part, at the discretion of the thesis advisor.

Admission to Candidacy:

A student who passes the comprehensive examinations is considered as a PhD candidate.

A PhD candidate should promptly ask the thesis advisor to form a doctoral committee.

Doctoral Committee:

Per student's request, the thesis advisor will form a Doctoral Committee. The Committee will consist of at least five members, including the thesis advisor and at least two members from the Electrical Engineering Department. The Committee must also include at least one member from outside the Department, preferably from outside the School of Engineering. The Doctoral Committee will review the proposed thesis topic, and determine any further changes to approving the research objective.

Thesis Research:

The period following the comprehensive examinations is devoted to research for the thesis, although such research may begin before the examinations are complete. After the research topic approved by the Doctoral Committee, the student should conduct thesis research toward the objective defined.

Publication:

One or more refereed articles based on the thesis research must be accepted for publication in a professional or scientific journal approved by the Doctoral Committee.

Thesis Defense:

The thesis must be made available to all examiners one month prior to the examination. The oral examination shall consist of a presentation of the results of the thesis and the defense. Thesis defense is open to all faculty members of the university, but only members of the Doctoral Committee have a vote.

Program Completion:

At least one month before the degree is to be conferred, the candidate must submit to the Dean Office of the School of Engineering two copies of the final version of the thesis describing the research in its entirety. The thesis will not be considered as accepted until approved by the Doctoral Committee and publication acceptance.

All doctoral theses must also be reproduced on microfilm, for responding to requests for copies by individuals and libraries.

The University reserves the right to evaluate the undertakings and the accomplishments of the degree candidate in total, and award or withhold the degree as a result of its deliberations.

Time Limit for Completing Degrees:

All requirements for the doctoral degree must be completed within ten years following acceptance for the PhD program. Extensions will be allowed only in unusual circumstances and must be approved in writing by the Committee on Graduate Programs and the dean of the School of Engineering.

****Note:** These courses are only for US citizens or Green Card holders

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to demonstrate high professional ethics and mastery of fundamental concepts of electrical engineering.
- Be able to identify, investigate, formulate, and solve new problems of interest, conduct independent scholarly research, and contribute new ideas and engineering concepts to society.
- Be able to think analytically and demonstrate knowledge and language skills to serve in positions of technical leadership.
- Be able to demonstrate independence and assume major professional and ethical responsibilities in their careers.
- Understand business and engineering economics.
- Be able to clearly and effectively communicate difficult technical concepts.
- Understand and identify various needs of customers.
- Be able to work as a team member productively and successfully.

- Be able to demonstrate a high level of academic skills in education, technical creativity, leadership, and management

Ph. D. in Electrical Engineering Requirements:

The completion of at least 30 trimester credit units of graduate courses in the major field of study, 30 credit units of thesis, includes:

- 12 credit units at least of required engineering courses EEN 902, 913, 914, 917, 918, 928, 932, 943, 953, 960, 961, 963, 971 and 995, CEN 922 and 973, SEN 920, or other approved courses
- 12 credit units at least of elective engineering courses EEN 903, 916, 919, 922 to 925, 931, 941, 942, 946, 950, 952, 964, 965, 972, 977 and 996, CEN 940, 960 and 9965, SEN 959, 980, 984 and 992, GRN500 and 597, or other approved courses
- 6 credit units at least in applied mathematics courses AMN 912, 920, 921, 922, 930, 940, 950 and 952, or other approved courses
- 30 credit units of thesis

Engineering Management Programs:

Masters of Science in Engineering Management

The scope and complexity of engineering management responsibilities have changed dramatically during the past few years. Strong competition in the marketplace and the need to eliminate the trade and service deficit have put an emphasis on technology. It is the source of new products and improved productivity in manufacturing and service delivery.

Today's engineering management must incorporate technological innovation, satisfy design and safety requirements, manage human resources to boost productivity, use natural resources efficiently, stay on top of other environmental concerns and emphasize total quality in operations.

The Engineering Management program is designed to prepare technical managers from fields of engineering, science and math, and computer science to manage more effectively within technologically based organizations.

ITU's curriculum for the MSEM program is concerned with the management issues of Software Engineering, with the primary emphasis placed on the management aspects of building and modifying high quality software systems. It thus allows the student to prepare for careers in businesses that build and sell computers and/or software, in Internet based companies, electronic business organizations, diverse research and development laboratories, aerospace companies, banks, and insurance companies.

An undergraduate degree is required for admission. If the undergraduate degree is in an area of Computer Science, Software Engineering or a related technical field, then a minimum grade point average of 3.0 is required for the last half of courses taken that count for the degree. If the undergraduate degree is in a different field then the minimum grade point average required for all courses in that degree is 3.0. Exceptions to these requirements can be made by the academic council.

Curriculum:

To complete this program each student must complete a total of 36 units. The 36 units are required as follows:

- 1 course from the general Math courses – 3 units
- 5 courses from the Engineering Courses – 15 units
- 6 courses from the MBA courses – 18 units

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Be able to apply skills pertinent to the entrepreneurial and entrepreneurial management of both existing and emerging technologies.
- Understand engineering safety, strategies, and life cycle properties of a project.
- Be able to estimate and control engineering cost, including planning and scheduling, labor productivity, alternative methods for project delivery, and computer applications, such as e-business solutions.

MS Engineering Management Requirements

The completion of at least 36 trimester credit units of graduate courses in the major field, 3 credit units of Joint Seminar and/or thesis or project, includes:

- 3 credit units of Applied Mathematics courses: AMN 912, 922, 930, 952, or other approved courses
- 15 credit units in Engineering courses: EEN 910, CEN 910, 940, 942, 960, 965, 966, 968, 998, 999, SEM 906, SEN 909, 911, 920, 930, 932, 934, 935, 936, 941, 942, 951, 952, 956, 960, 962, 963, 964, 974, 982, 985, 991, 992, 996 or other approved courses
- 18 credit units in MBA courses, project or thesis upon approval by the advisor: ACTN 900, 910, CONS 900, EBUS 910, ECON 920, FINN 933, GRN 511, 597, 599, 921, 922, 923, MBAN 998, 999, MGTN 901, 920, 930, 942, 948, 949, 958, and all Information Systems Management courses or other approved courses.

****Note:** All the Information Systems Management major courses can be counted toward the EM Program.

Master of Science in Industrial Management

The purpose of the Industrial Management program is the advance competencies achieved at the Bachelors level and the preparation of the students to presume leadership role in the technical fields of the manufacturing industries.

International Technological University offers a unique graduate program leading to the Masters of Science degree with a major in Industrial Management.

The purpose of the Industrial Management program is the advance competencies achieved at the Bachelors level and the preparation of the students to presume leadership role in the technical fields of the manufacturing industries.

Graduates with an industrial management can immediately enter a supervisory role in manufacturing. In addition, industrial managers gain the necessary interpersonal skills. The MS in industrial management degree also covers organizational management, manufacturing economics and industrial engineering aspects of modern industry.

Admission Requirements:

Admission to the MS in industrial management program requires a baccalaureate degree in engineering, technology, or industrial education. Applicants with degrees in related areas of industrial experience are also considered.

Program Requirements:

Upon completion of the Masters degree in Industrial Management, the students must complete a total of 36 trimester units. Students pursuing a degree in ITU MS Industrial Management program will take 24 trimester units of core courses in the Industrial Management concentration category listed below. In addition they must take an additional 12 units from MBA ITU management concentration courses.

The Masters Science degree in Industrial management and MBA courses provide some of the best preparation for a career in production and manufacturing. This Master level coursework includes industrial market structures, and advanced management techniques.

Curriculum:

The Industrial Management incorporates a combination of industrial operation, technology and management courses designed to prepare students for management positions in manufacturing and production industries.

The MS in Industrial Management program will help the students to develop the mathematical skills to work with complicated production chains. The MS in Industrial Management Coursework will typically take one to two years to complete.

To complete this program each student must complete a total of 36 units. The 36 units are required as follows:

- 8 courses from the Industrial Management Courses – 24 units
- 4 courses from the MBA Management courses – 12units:

Program Learning Outcomes:

Upon completion of this program, graduates will:

- Understand the production planning and control, using an enterprise resource planning software package: SAP.
- Be familiar with the management, organizational leadership and quantitative analysis of industrial and business problems solving.
- Understand the scientific techniques for quality control, assurance, and management of production.
- Be able to show and perform supervisory duties required in manufacturing industries for maximizing production efficiencies and effectiveness regarding time, materials, machine, and human resources.
- Be able to develop and express a work ethic reliable with industrial management practices and techniques.
- Be familiar with the human resource management skills such as communication, motivation, teamwork, cooperation, and coordination.
- Understand the safe work-practices and explain their value to the industrial work environment.
- Be able to explain the significance of the utilization of new technology to increase efficiency and productivity.

Interdisciplinary Sciences Programs:

Doctor of Philosophy in Consilience Sciences

Program Requirements

Application:

Student who completed his/her master degree in the subject field with GPA 3.0 or above is eligible to apply for the Ph.D. program. Exceptions may apply to select individuals upon AQC approval.

Thesis Advisor:

It is the student's responsibility to obtain consent from a full-time faculty member in the student's major department to serve as his/her prospective thesis advisor. Students are required to find a thesis advisor as soon as possible after being accepted as a Ph.D. student.

The student and the thesis advisor jointly develop a complete program of studies for research in a particular area. The complete program of studies (and any subsequent changes) must be submitted to the AQC and approved by the student's advisor.

Course Work and Study Program:

The students are expected to complete a minimum of 60 trimester units of graduate credit beyond the master's degree. Of these, 30 trimester units may be earned through course work and independent study and 30 through the thesis. All thesis units are graded on a Pass/No Pass basis. A maximum of 15 trimester units may be transferred from other accredited institutions at the discretion of the student's advisor.

Comprehensive Examinations:

After completion of the formal course work approved by the Doctoral Committee, the student shall request for comprehensive examination. The examination shall be written exam representing sufficient preparation in depth and breadth for advanced research in the major.

The comprehensive examinations normally must be completed within four years from the time of admission. Comprehensive examinations may be repeated only once, in whole or in part, at the discretion of the thesis advisor.

Admission to Candidacy:

A student who passes the comprehensive examinations is considered as a Ph.D candidate.

A Ph.D candidate should promptly ask the thesis advisor to form a doctoral committee.

Doctoral Committee:

On the student's request, the thesis advisor will form a Doctoral Committee. The committee will consist of at least five members, including the thesis advisor and at least two members from the consilience science department. The committee must also include at least one member from outside the department. The Doctoral Committee will review the proposed thesis topic, and determine any further changes to approving the research objective.

Thesis Research:

The period following the comprehensive examinations is devoted to research for the thesis, although such research may begin before the examinations are complete. After research topic proved by the Doctoral

Committee, the students should conduct the thesis research toward the objective defined.

Publication:

One or more refereed articles based on the thesis research must be accepted for publication in a professional or scientific journal approved by the Doctoral Committee.

Thesis Defense:

The thesis must be made available to all examiners one month prior to the examination. The oral examination shall consist of a presentation of the results of the thesis and the defense. Thesis defense is open to all faculty members of the university, but only members of the Doctoral Committee have a vote.

Program Completion:

At least one month before the degree is to be conferred, the candidate must submit to the Academic Quality Committee two copies of the final version of the thesis describing the research in its entirety. The thesis will not be considered as accepted until approved by the Doctoral Committee and publication acceptance.

All doctoral theses must also be reproduced on microfilm, for responding to requests for copies by individuals and libraries.

The University reserves the right to evaluate the undertakings and the accomplishments of the degree candidate in total, and award or withhold the degree as a result of its deliberations.

Time Limit for Completing Degrees:

All requirements for the doctoral degree must be completed within ten years following acceptance for the Ph.D. program. Extensions will be allowed only in unusual circumstances and must be approved in writing by the Committee on Graduate Programs and the dean of the School of Engineering.

****Note: These courses are only for US citizens or Green Card holders**

6. Course Descriptions

A descriptor followed by a number identifies a course. The descriptors are AMN (applied mathematics), CSN (computer science), MMN (multimedia), CEN (computer engineering), EEN (electrical engineering), SEN (software engineering), MBAN (Master of Business Administration), ACTN (accounting), ECON (economics), DISN (decision and information science), FINN (finance), FINA (Fine Arts), MGTN

(management), and MKTN (marketing) MISY (Management Information System), HRMG (Human Resource Management), BUS (Business), . The graduate courses are assigned the course numbers at the 500, 600, 700, 800 & 900 levels. All 500, 600 & 700 block courses have 2 credit unit awards and the same course title with an 800 or 900 block awards 3 credit units. All 500, 600, & 700 block courses therefore have an 800 & 900 equivalent, and visa versa. The doctorate courses are assigned 800 and 900 numbers. This number system is generated for the same course (with differing credit units) to preserve the preexisting database of courses taken from previously enrolled students.

Prerequisite Requirements

All courses listing a prerequisite requirement can be petitioned by the student for waiver and evaluated by the Academic Committee on a case-by-case basis.

APPLIED MATHEMATICS (AMN)

AMN 910 Linear Algebra (3 credit units)

This course covers the algebraic basic concepts of matrices and matrix operations, determinants, systems of linear equations, Gauss elimination, LU decomposition, vector spaces with inner product. Change of bases, transformations. Gram-Schmidt orthonormalization. Meaning and purpose of eigenvalues, eigenvectors and algorithms for computing them.

Prerequisites: Knowledge of C or Java.

AMN 912 Applied Mathematics Methods I (3 credit units)

This course is intended to provide introduction and accessibility to ordinary and partial differential equations, linear algebra, vector analysis, Fourier analysis, special functions, and eigenfunction expansions for their use as tools of inquiry and analysis in modeling and problem solving.

Prerequisites: AMN 910.

AMN 920 Optimization Techniques I (3 credit units)

Basic concepts, unconstrained optimization, linear programming, simplex method, degeneracy, multidimensional optimization problems involving equality or inequality constraints by gradient and non gradient methods.

AMN 921 Optimization Techniques II (3 credit units)

Combinatorial optimization, Hopfield neural network model, Simulated Annealing and Stochastic machines, mean field annealing, genetic algorithms. Applications to: Tab search, traveling salesman problems, telecommunications problems, quadratic 0-1 & quadratic assignment

problems, graph partition and graph bipartition problems, point pattern matching problems, multiprocessor scheduling problems.

Prerequisite: AMN 920

AMN 922 Applied Mathematics Methods II

This course has not been taught since the switch to Moodle in 2007. No related data are available in the EMS.

AMN 930 Numerical Analysis

Numerical solution of linear system of equations by direct method and iterative method, numerical least square problem, eigenvalue problem, numerical solution of non-linear systems of equations and optimization problem.

Prerequisites: Knowledge of C or Java.

AMN 940 Discrete Mathematics (3 credit units)

This course covers topics that are important in the development of computer algorithms and data structures, such as mathematical induction, asymptotic notations, recurrences, infinite series summations, graphs, digraphs, trees and counting combinatorics and discrete probabilities analysis and statistical quality control.

AMN 950 Fast Fourier Transformations & Applications (3 credit units)

This course is designed to provide electrical/computer engineering and applied mathematics graduate students with the background knowledge of Fourier Transformations (FT), Discrete Fourier Transformations (DFT) and Fast Fourier Transformations (FFT). The applications of FFT in Filter Design, Signal Processing and Image Processing are also included in this course.

AMN 952 Probability & Statistics for Engineers (3 credit units)

This course covers the fundamentals of probability and statistics, as well as some widely-used probabilistic models and statistical analysis methods for applications in the areas of engineering. Topics include probability axioms, random variables, densities, basic discrete and continuous distributions, sampling distribution and data descriptions, inferences on means and variances, one- and two-sample tests of hypotheses, linear regression, and analysis of variance. A free statistical computing and graphics software, R, will be used in this course.

AMN 996 Independent Study (3 credit units)

By arrangement with instructor. Independent study of topics of special interest in applied mathematics under the direction of a knowledgeable instructor in the field. It may consist of reading, homework, tests, presentations and projects determined by the instructor.

Prerequisite: Graduate standing

COMPUTER SCIENCE (CSN)

CSN 800 Software Engineering I (3 credit units)

Requirements specification techniques, software design techniques and tools, implementation issues, software engineering and programming languages.

Prerequisite: CSN 382

CSN 810 Digital Design I (3 credit units)

Switching algebras, combinational circuits, minimization techniques, and sequential circuits. Analysis of synchronous sequential circuits, counters, shift registers, use of CAD tools.

Prerequisite: CSN 321

CSN 822 Introduction to Computer Architecture (3 credit units)

Overview of computer systems, CPU design, computer arithmetic, microprogramming techniques, design of main memory, memory hierarchies and management, input/output subsystem organization, interrupt handling and DMA channels. Lab projects include design and implementation of a CPU based on a bit-slice microprocessor.

Prerequisites: CSN 321, CSN 324

CSN 830 Software Testing & Quality Engineering (3 credit units)

Modern testing techniques based on black box or behavior testing, control flow and data flow testing, transaction based and finite state testing, domain testing, reliability testing, software reliability models, tools and automation.

Prerequisites: CSN 364, 374 and 464

CSN 835 Internet Architectures (3 credit units)

The goal of this course is to provide students with a broad and deep understanding of the Internet. The topics include unicast routing, protocols, multicast routing protocols, Transport Protocols, Traffic Engineering, Multiprotocol Label Switching (MPLS), Generalized MPLS, Quality of Services, Queuing in Packet Switches, Switch Fabrics, Packet Processing, VPNs, and Mobile IP. The course also provides students with an opportunity to design and write networking programs.

Prerequisite: None

CSN 850 Modern Physics for Engineers (3 credit units)

The material covered in this course is concerned with fundamental topics in modern physics with extensive applications in science and engineering. Topics covered are as follows: the particle nature of matter, matter waves, quantum mechanics in one dimension and three dimensions, tunneling phenomena, crystal structure, statistical physics, and semiconductor theory and devices.

Prerequisites: AMN 301, AMN 302 & College Physics

CSN 851 PERL Programming (3 credit units)

An acronym for "Practical Extraction and Report Language", PERL gained attention in the explosion of Internet as a quick and effective way to create applications that provide much of the web's interactivity. Now, PERL is an industry standard and popularly interpreted programming language known for its power and flexibility. It combines the familiar syntax of C, C++, and scripting languages into a tool that is more powerful than the separate pieces used together. PERL is available on virtually every computer platform, and is used in all types of applications, including Web and Internet applications, generic software testing script writing for automating tests, system administration and many other fields of applications. This course will teach basic PERL data structures, flow control, basic I/O, operators, strings, arrays, regular expressions and subroutines.

Prerequisites: Any programming language knowledge is helpful, but not required. UNIX experience is helpful.

CSN 853 Microelectronic and Integrated Circuit Engineering (3 credit units)

Analysis and design of passive devices, resistors, capacitors, diode, MOSFETS and BJT, their principles, fabrication technology and small signal modeling. Inverters, static and dynamic CMOS logic gates. SPICE simulation of circuits. Device layout and RC extraction.

Prerequisite: CSN 321

CSN 860 Introduction to Communication Systems (3 credit units)

This course provides an introduction to both digital and analog communications systems. Topics covered include signal representation in communication systems, principles underlying major components of digital and analog communication systems with an emphasis on modulation and demodulation methods. It intends to provide necessary background and technical skills to work professionally in communication systems.

Prerequisite: None

CSN 861 Bluetooth Implementation and Wireless LAN (3 credit units)

Bluetooth is a global specification for wireless connectivity that allows phones, PDAs and other portable devices to connect to each other and transmit voice and data by radio in open air rather than cables. 802.11 is a wireless LAN protocol that is increasingly gaining industry support. This course provides an overview of each of these technologies, their unique capabilities, advantages and disadvantages. Students will understand protocol concepts, and do hands-on programming projects about software implementation. Software components including protocol stack design, MAC layer firmware design, performance issues, power management and application development are addressed.

Prerequisite: CSN 381

CSN 864 Java Programming (3 credit units)

Introduction to Java, Application versus Applet, installing Java, variables, types, expressions, control constructs, java.lang, strings, vectors, Hash tables, File I/O, The Java AWT, components, events, layout managers, improved GUI libraries, threads, synchronization, Java intervals, Sockets, writing a server and a client.

Prerequisites: CSN 381 and CSN 481

CSN 866 Routing in the Computer Network (3 credit units)

This course introduces different routing protocols (RIP, IGRP, EIGRP, OSPF, IS-IS and BGP) as well as new developments (multicasting and MPLS). Students will learn interior and exterior routing protocols that are currently being used in the Internet. In addition, they will study multicast routing and multi-protocol layer switching (MPLS).

Prerequisite: CSN 360

CSN 869 Optical Networking (3 credit units)

This course is designed to provide computer science/computer engineering graduate students fundamental knowledge in optical communication and networking methods and enabling technologies. The course introduces students to optical fiber characteristics, optical networking components, physical layer systems: 10M/100M/ 1GE/10GE Ethernet, OC-3/OC-12/OC-48/OC-192 SONET Rings and ADMs, Ethernet, L. Bridges and switches.

Prerequisites: A basic course in Telecommunication

CSN 881 Introduction to C++ Programming Language (3 credit units)

This course introduces the student to Object Oriented Programming through general C++. No IDE (MS Visual C++, Borland OWL, etc.) will be taught. It covers specification and implementation of classes; access modifiers to support information hiding; constructors, destructors and memory management; class inheritance, virtual functions and runtime binding; overloaded operators, isopteran library. Not covered are exception-handling, templates, STL, and iterations.

Prerequisite: CSN 381

CSN 882 Oracle Database Architecture and Administration I (3 credit units)

The course is composed of two parts: Oracle architecture and administration. The first part gives a comprehensive picture of Oracle architecture and discusses the concept of Oracle database and instance. The second part shows students how to create an Oracle database, allocating system storage and planning for future storage requirements, creating and modifying database storage structure and objects, and controlling and monitoring user access to the database.

Prerequisite: CSN 378

CSN 884 UNIX Networking Programming (3 credit units)

The course will cover in detail the different interposes communication (IPC) facilities available under the Unix operating system to develop distributed applications in a network environment. Distributed application components can be executed on the same machine, or on different machines, or a combination. These IPC facilities have two main attributes: the IPC interface and the network protocol. The course covers in detail the following interfaces: pipes, FIFO, shared memory, message queues, semaphores, sockets, system V Transport Layer Interface (TLI), and Remote Procedure Calls (RPC). In addition, we cover a useful set of network routines that simplifies distributed programming.

Prerequisites: CSN 381, CSN 382 and SEN 556

CSN 885 Introduction to Linux/Unix Operating System (3 credit units)

Linux operating system is a multi-user, multi-tasking operating system that runs on many platforms, including Intel Pentium, Intel Strong/Arm, Motorola MC68K, and Power PC processors. It implements a superset of the POSIX standard. Linux interoperates with other operating systems, including those of Microsoft, Apple, and Novell. In addition, Linux supports a wide range of software including X-windows; TCP/IP networking (including SLIP, PPP, and ISDN) protocols etc. It has been one of the fastest growing operating systems with over 10 million users and/or systems installed world wide, and is one of the major emerging operating systems.

Prerequisite: None

CSN 886 Software Design Using Unified Modeling Language (UML) (3 credit units)

This course is an introduction to object-oriented principles of software design using the Unified Modeling Language (UML). Object oriented systems offer the promise of constructing highly modular and reusable software components. In this course we will discuss what is meant by object oriented design from analysis, through system design to programming implementation. The course will focus on building the object-oriented (OO) analysis model for software engineering. Then it defines in depth principles of object orientation reviewing the characteristics that actually comprise a true object. The course covers the gathering of requirements for software design, software project organization & management, the role of design, use-case analysis, object modeling in software engineering and an introduction to design patterns. UML is presented in context throughout the discussion with emphasis on the practical application of OO principles and techniques, including the use of UML to solve real-world problems. Students are expected to write a detailed description of the design for each of the programs, incorporating UML models where appropriate. Students will implement their programs in the Java programming language.

Prerequisites: CSN 374, CSN 382. Students should be familiar with Java, C++ or other language, some web programming as well as basic data structure concepts and some UNIX.

CSN 892 Computer Graphics (3 credit units)

Historical development of computer graphics, black and white graphics programming, color raster graphics, resolution and memory requirements, look-up tables, vector graphics and matrices, surfaces, rotation and scaling, graphics primitive, and transformation.

Prerequisite: AMN 340

CSN 896 Independent Study (3 credit units)

By arrangement with instructor. Independent study of topics of special interest in computer science under the direction of an instructor. It may consist of reading, homework, tests, presentations and projects determined by the instructor.

Prerequisite: None

COMPUTER ENGINEERING (CEN)

CEN 910 Digital Design I (3 credit units)

Switching algebras, combinational circuits, minimization techniques, and sequential circuits. Analysis of synchronous sequential circuits, counters, shift registers, etc. use of CAD tools.

Prerequisites: None.

CEN 911 VLSI Design Fundamentals (3 credit units)

Fault simulation and testing of VLSI circuits, symbolic layout, yield analysis and advanced topics, place & route, VLSI CAD tools, programmable arrays, and ASIC concepts.

Prerequisite: CEN 911

CEN 932 Network Management (3 credit units)

Basic principles and functionality of network management systems, introduction to network management protocols, i.e., Simple Network Management Protocol (SNMP), remote monitor functionality and network security, and future trends in network management tools and technologies.

Prerequisite: CSN 382 and CSN 360

CEN 933 Digital Signal Processing (3 credit units)

Discrete time signals and systems and properties, analysis of discrete time systems, structures for discrete time systems, and properties of analog filters and frequency transformations.

Prerequisites: Graduate Standing

CEN 935 Internet Architectures (3 credit units)

The goal of this course is to provide students with a broad and deep understanding of the Internet. The topics include Unicast Routing Protocols, Multicast Routing Protocols, Transport Protocols, Traffic Engineering, Multiprotocol Label Switching (MPLS), Generalized MPLS,

Quality of Services, Queueing in Packet Switches, Switch Fabrics, Packet Processing VPNs, and Mobile IP. The course also provides students the opportunity to design and write networking programs.

Prerequisite: None

CEN 940 Network Security Techniques (3 credit units)

Network security plays a key role in today's network computing environment. This course is designed to familiarize the students with fundamentals of network security issues, techniques, and applications. Topics include: introduction to computer networks, cryptography, secret and public key algorithms, authentication systems, digital signature, and secured e-mail systems. Some current hot topics, such as Internet security, e-commerce, and Virtual Private Network (VPN) will also be briefly covered.

Prerequisite: None

CEN 942 Digital Image Processing I (3 credit units)

This course is intended to provide introduction to basic concepts and methodologies for digital image processing, and to develop a foundation that can be used as the basis for further study and research in this field.

Prerequisites: Knowledge of C or Java.

CEN 950 FPGA Design (3 credit units)

The fast growing FPGA (Field Programmable Gate Array) provides a quick prototyping and flexible design choice in digital system. This course offers a balanced study between academic and practical approaches. It covers the basic concept of PFGA such as architecture, design flow and the advantages vs. its limitations. By working on a mini-project, students can develop solid understanding and hands-on experience in this exciting digital design area. Good understanding of digital design principle is required. Knowledge of HDL (Hardware Description Language), such as VERILOG or VHDL, is not required but is very helpful.

Prerequisites: CEN 910

CEN 951 Computer Architecture (3 credit units)

This course focuses on principles of computer architecture, offering students an overview of computer systems, CPU design, computer arithmetic, instruction set architecture, pipelining, microprogramming techniques, memory hierarchies and management, input/output subsystem organization, and performance measurement. Its purpose is to prepare students to understand internal organization of computers and how it affects performance.

Prerequisites: None

CEN 952 Digital Design with Verilog HDL (3 credit units)

Hardware description language, algorithmic approach to digital design, design specification, synthesis, designs with gate arrays, simulation of digital design, and CAD tools and lab.

Prerequisite: CEN 951

CEN 954 ASIC Design and Practice (3 credit units)

The purpose of this course is to provide the electrical and computer engineering graduate students with the knowledge of ASIC design methodology, Verilog HDL and Testbench. Main topics to be covered in this course are an introduction to RTL design, Practical coding for synthesis, Verification, Physical design (place and route), and One of Cadence or Synopsys physical design tools.

Prerequisites: CEN 951.

CEN 956 Distributed Computing systems (3 credit units)

No description available on EMS

CEN 959 Operating Systems I (3 credit units)

Process management, memory management, scheduling, concurrent processing, synchronization mechanisms, resource allocation, resources, deadlock, and file systems.

Prerequisite: CSN 382

CEN 960 Computer Communication Networks, TCP/IP (3 credit units)

The course covers a detailed analysis for network topology, connectivity and routing design issues. An overview of graph theory algorithms used for the design of computer networks. Introduction to queuing theory techniques for the calculation of network delays. Network backbone design, local access design, basic protocol modeling and verification.

Prerequisite: None

CEN 961 Bluetooth Implementation and Wireless LAN (3 credit units)

Bluetooth is a global specification for wireless connectivity that allows phones, PDAs and other portable devices to connect to each other and transmit voice and data by radio in open air rather than cables. 802.11 is a wireless LAN protocol that is increasingly gaining industry support. This course provides an overview of each of these technologies, their unique capabilities, advantages and disadvantages. Students will understand protocol concepts, and do hands-on programming projects about software implementation. Software components including protocol stack design, MAC layer firmware design, performance issues, power management and application development are addressed.

Prerequisite: CSN 381

CEN 962 Design of Embedded Computing Systems (3 credit units)

This course provides an overview and hands-on experience of the different phases of the design process of the embedded computing systems. The design phases span the process spectrum from requirements through manufacturing phases. The alternatives and choices available to the designer in every phase are studied together with the rationale for choosing one alternative over the other. The student will become familiar

with the phases involved in an embedded computing system design project, and will be familiar with some of the tools and choices available at every phase. The student will also be able to decide which alternatives better suit that project's specific requirements.

Prerequisites: CSN 321 and CSN 324

CEN 963 Switching in Computer Networks (3 credit units)

This course focuses on switching theory in computer networks. The course covers LAN switching techniques, including bridging, VLANs and trunking. The course also covers different switch fabrics, including input-buffered/input-output-buffered switches, shared-memory switches, banyan switches, knockout switches, abacus switches, cross point-buffered switches, Clos-Network switches and wireless ATM switches. Furthermore, this course studies IP switching, in particular MPLS technology, including MPLS traffic engineering and MPLS/VPN.

Prerequisite: CSN 360

CEN 964 Computer Interface and Firmware Engineering (3 credit units)

As computers have been widely used almost everywhere, from intranet to Internet, from personal uses to large-scale business applications, there are strong, increasing demands for computer-based industrial automation and instrument control. This is often referred to as computer interface, the bridge between hardware and software. This course is designed to overview various hardware interfaces that are practically used in industries as well as software that can communicate through these interfaces. Specifically it introduces communications through the serial and parallel ports, RS232 and GPIB interfaces, I/O buses, and device drivers written in C/C++. This course will also discuss microprocessor embedded systems and high-level graphical user interface (GUI) programming. Experimental examples are presented in the class and students are given practical projects to solving real-world problems.

Prerequisites: CSN 381, SEN 909, CEN 0 and CEN 951

CEN 965 Local Area Networks (3 credit units)

CEN 966 Routing in Computer Networks (3 credit units)

This course introduces different routing protocols (RIP, IGRP, EIGRP, OSPF, IS-IS and BGP) as well as new developments (multicasting and MPLS). Students will learn interior and exterior routing protocols that are currently being used in the Internet. In addition, they will study multicast routing and multi-protocol layer switching (MPLS).

Prerequisite: CSN 360

CEN 968 Design and Maintenance of Commercial Websites (3 credit units)

This course focuses on the basic concepts of setting up, designing and maintaining commercial websites. It introduces both the principles and skills of building websites that people will visit, use, bookmark and

revisit. It covers the entire website building process from server setup and site planning to the designs of both the server-side storage and the client-side presentation. This course represents 45 contact hours of instruction required for 3 trimester units or credits

CEN 969 Optical Networking (3 credit units)

This course is designed to provide computer science and computer engineering graduate students fundamental knowledge in optical communication and networking methods and enabling technologies. The course is an introduction to optical fiber characteristics, optical networking components, physical layer systems: 10M/100M/ 1GE/10GE Ethernet, OC-3/OC-12/OC-48/OC-192 SONET Rings and ADMs, Ethernet, L. Bridges and switches.

Prerequisite: A basic course in Telecommunication

CEN 971 Storage Area Network (SAN) Implementation (3 credit units)

In this comprehensive, practical course, the instructor will cover all aspects of storage networking. First, the theory of how a SAN can help consolidate conventional server storage onto networks will be explained. Understanding includes how a SAN can help make applications highly available no matter how much data is stored, which, in turn, makes data access and management faster and easier. The course will provide students practical advice on the design and implementation of this new technology and how it works to make deciding to adopt storage networking easier. Students will understand the theory of SAN technology, and appreciate its benefits. This course provides a detailed up-to-date coverage on the following topics: the evolution of computing in data centers leading to SANs, killer applications for SAN technology, storage networking theory, its meaning to an enterprise information processing architecture, software components required to implement, and practical issues in SAN implementation and management.

Prerequisite: CEN 963

CEN 973 Neural Networks I (3 credit units)

Neuronal activity and mathematical models, perception type machines and learning, cerebellar models (work by Marr, Albus, Pellionisz and Llinas), parallel distributed processing (work by Hopfield, Grossberg McClelland and Rumelhart), and feedforward and feedback networks.

Prerequisite: AMN 920

CEN 974 Neural Networks II (3 credit units)

Application of neural networks, architectures for neural networks and projects.

Prerequisite: AMN 920

CEN 996 Independent Study (3 credit units)

By arrangement with instructor. Independent study of topics of special interest in computer engineering under the direction of an instructor who

is knowledgeable in the field. It may consist of reading, homework, tests, presentations and projects determined by the instructor.

Prerequisite: Graduate standing

CEN 998 M.S. Project (3 or 6 credit units)

By arrangement with project advisor. A nominal number of 2 or 4 credit units is expected toward the M.S. degree if the Project Option is selected. Students will conduct independent research of an approved topic in computer engineering, prepare a technical report, and defend it before a faculty advisor.

Prerequisite: Graduate standing

CEN 999 M.S. Thesis (6 credit units)

By arrangement with thesis advisor. A nominal number of 6 credit units is expected toward the M.S. degree if the Thesis Option is selected. Conduct independent research of an approved topic in computer engineering, prepare a thesis, and defend it before a committee composed of a number of faculty designated by department chair.

Prerequisite: Graduate standing.

DIGITAL ARTS (MMM)

MMM 810 General Production Pipeline (3 credit units)

This course covers the general procedures and methodologies to produce a production pipeline from start to finish. One will be lead through the production process breaking down each phase in a step-by-step fashion and will be introduced to easily applied principles of scheduling each task. Students will learn to apply these principles to breakdown and schedule in either real-time rendering projects – such as a video game, or image rendered projects – from animated shorts to features.

MMM 830 Graphical Communications (3 credit units)

This course focuses on the fundamental visual language of design and its application in the media and tech industries. There will be a focus on traditional design fundamentals, such as type and composition, but these fundamentals will be taught in the context of modern digital methodologies, techniques and productions. Course projects will include designing mobile apps, video games, digital films or other industry specific applications

MMM 901 Story Visualization (6 credit units)

In this course the student will focus on scripting, storyboarding and techniques used in creating and portraying a story. The student will focus on process rather than production.

MMM 902 Design (6 credit units)

In this course students will use design as form of visual communication.

This course introduces the basic principles to solve design problems and the ability to demonstrate effective use of color, typography, and production skills by using industry standard software. Students will explore the use tools, techniques and design layout principles to produce professional designs.

MMM 903 Animation (6 credit units)

In this course students will understand the basics of modeling, positioning and rendering 3-D objects. Students will understand Animation language, software and provide the necessary design skills and techniques employed by 3-D animation. Students will develop an understanding and use of a wide variety of applications used in animation.

MMM 904 Sound Design (6 credit units)

This course provides an introduction to sound design principles for multimedia in a broad and diverse manner. Students will develop skills in recording, digital editing and mixing with industry standard software and techniques.

MMM 905 Creating Story (6 credit units)

This course provides a variety of story development techniques for shaping a compelling story. The students will learn the fundamentals to demonstrate and adapt stories into a specific project.

MMM 906 Archetypes (6 credit units)

Students will learn to develop characters that will come alive. This class will help the student understand the importance of adding depth, detailed background, and distinctive characters who correspond to their thoughts and action.

MMM 907 Acting (6 credit units)

Students will learn the basic techniques of acting. This class will explore the creativity of finding emotions in acting and conveying them to the audience. Physical exploration, monologues, improvised and rehearsed scenes will give the students the necessary tools to succeed in acting.

MMM 908 Camera Workshop (6 credit units)

This workshop will teach students the fundamentals for video and lighting. This course will cover equipment, procedures and methodology useful for documentaries, dramatic and industrial projects. Learn useful techniques more effectively to develop your styles.

MMM 909 Intro to Computer Game Development (3 credit units)

What are the different elements to a game? What makes a great game? Computer game development requires all facets of Computer Science, including Computer Graphics, Artificial Intelligence, Algorithms, Data Structures, Networking, and Human-Computer Interaction. It also requires knowledge of other disciplines including Economics,

Mathematics, Physics, and Psychology. The value of this course goes beyond culminating Computer Science. It is largely a hands-on course where real-world skills including design, teamwork, management, documentation, and communications are critical. This course will delve into topics such as the game engine, rendering, user interfaces, sound, animation, and game hacking. This course will also cover designing MMORPGs and mobile games.

MMM 910 Business Marketing (6 credit units)

This course will help students understand and handle the challenges encountered in a busy marketing environment. Appreciate and utilize the different marketing functions, the management of these functions and how each function affects others in the marketing domain.

MMM 911 Web Graphic Design (3 credit units)

This course provides students with instruction in graphic editing software. Projects will use tools, layers and filters to design, edit and create digital images for the Web, apps and digital and interactive media. Topics covered will include:

- Basic Web design tenets
- Using color effectively
- Understanding fonts
- Designing navigation
- Creating graphics that don't distract from your site
- Using multimedia (sound, animation, and other media) on your site

MMM 912 Web Programming/Authoring (6 credit units)

The web programming/authoring course includes hands on instruction in the tools and techniques in making a high quality and professional website. Students will gain HTML skills required to create a web page. Software, code, writing, incorporating sound and video will be covered in this course.

MMM 913 Copywriting/Journalism (6 credit units)

This course covers all aspects writing for print, internet and broadcasting. Student will acquire skills to write and articulate various types of advertisement, which includes strategies, proposals, slogans and text copies.

MMM 914 3D Art Production (6 credit units)

This production course gives the student a good technical basis for design quality and introduces the student to the concepts and techniques for 3-D computer graphics. The major focus will be on creating and demonstrating skills in various types of production using the latest software and tools essential to 3-D art.

MMM 915 Modeling (3 credit units)

Students will utilize sophisticated software tools, investigate new techniques and explore 3-D Modeling. They will use design principles on the computer to further their understanding of the creative process in constructing models and environments.

MMM 916 Animation (3 credit units)

Students will understand the basics of modeling, positioning and rendering 3-D objects. Students will understand animation language, software and provide the necessary design skills and techniques employed by 3-D animation. Students will develop an understanding and use of a wide variety of applications used in animation.

MMM 917 Game Development (3 credit units)

Students will understand and discuss the process of game development. This course carefully teaches how technical development and artistic development go hand in hand in this process. The course will investigate topics such as game engine, sound, rendering, user interface and other facets of computer science in game development.

MMM 918 Preproduction (3 credit units)

Students will learn all aspects of preproduction and planning for film and TV. Students will experience the role of producer and learn what it takes to plan and start a project and take it to completion.

MMM 919 Screenwriting (3 credit units)

This course is an introduction to writing for the screens. Topics include dialogue, characterization, plot, format, structure and the writing process. Students will learn to examine films from a writers' point of view and participate in writing exercises.

MMM 920 Storyboard and Layouts (3 credit units)

In this course, students will be introduced to storyboarding and the animation layout process as it relates to the narrative structure. Emphasis is placed on the full storyboard process from initial sketch (thumbnails) to final, sequential panels. Using supplied stories, designs and flow charts, students will learn to apply the essentials of drawing to the production of both single layouts and short layout sequences. Through interactive lectures, discussions, demonstration and studio work, students will be able to translate narrative concepts into effective visual communications for multimedia apps, video games and motion video productions.

MMM 921 Camera (3 credit units)

In this course students will achieve a comprehensive overview of camera work. Students will learn camera operation, mounts, movement and framing to make a better project. Focus is creating and showing a understanding of video as an art form in all contexts.

MMM 922 Editing (3 credit units)

This course will give the students knowledge and experience in video editing. Students will demonstrate the use of the latest editing software, post-production methods, sound editing, titling and effects. Topics include graphic matching, rhythmic editing, continuity and montage editing.

MMM 923 Special Effects (3 credit units)

This course will teach students how to use the latest industry standard software and demonstrate special effects to help tell a story. Practical usage on projects ranging from high budget to low budget films will be covered as well as enhancing footage.

MMM 924 Portfolio Production (3 credit units)

In this course students will compose a multi-media portfolio of past projects and work pieces in DVD format. Students will learn how the portfolio will apply to the job market environments and the important role it plays in the new digital age.

MMM930 Manufacturing Cinematic Space (3 credit units)

This seminar explores and juxtaposes two spatial mediums: film and architecture. As an entry-level design studio course, it uses the familiar language of film to teach volumetric thinking and design principles. The semester is divided into three projects: Analysis (1D), Construction (2D), and Space (3D). (1D) Students begin by analyzing a film through reading, writing, abstracting, and diagramming. (2D) Next, they choose a specific scene within their film to explore in depth through orthographic drawing and traditional architectural representation. (3D) Finally, they use the themes from their film as a catalyst for a design proposal. The final project is modeled physically and digitally, using design software and CAD/CAM/CNC equipment. Students are expected to participate in weekly discussions, presentations, and critiques, and use design software and tools. Some knowledge of the Adobe Creative Suite, CAD, and Rhinoceros, or equivalent, is not expected, but will be beneficial.

ELECTRICAL ENGINEERING (EEN)

EEN 901 Fundamentals of Semiconductor Physics (3 credit units)

The course will focus on crystal structure and crystal binding, introduction to quantum mechanics and quantum statistics, energy band theory, phonon theory of crystal vibrations, equilibrium carrier statistics, recombination-generation processes and carrier transport.

Prerequisite: A course in college physics.

EEN 902 Solid-State Electronics for Integrated Circuits (3 credit units)

The course will focus on practical knowledge of fabrication and

measurement of common semiconductor devices. It will consist of the processing of light emitting diodes, Schottky diodes, metal oxide semiconductor (MOS) capacitors, p-n junction diodes and field-effect transistors. Students start with plain wafers of silicon or gallium arsenide phosphide and have to design, create, and measure their own devices. Laboratory teaching assistants will supervise the students in these tasks, instruct them on how to make their own photolithography masks and guide the students through the lithography, pattern transfer, metallization and device measurement procedures. In the second term of the class, students will build and construct more advanced devices including MOS field effect transistors, bipolar transistors, microelectromechanical microphones, and laser diodes.

EEN 903 Semiconductor Devices and Modeling (3 credit units)

The course will introduce characterization of basic semiconductor devices based on semiconductor physics, band theory, drift and diffusion, recombination/generation, P-N junctions in equilibrium forward and reverse bias, breakdown, transient and AC behavior, and bipolar junction theory, switching and frequency limitations, Spice modeling theory and methods.

Prerequisite: EEN901 or instructor approval.

EEN 904 (904&905) Integrated Circuit Manufacture Processes (3 credit units)

The course will focus on principles of IC fabrication processes. It will introduce principles and practical aspects of fabrication of devices for MOS and bipolar integrated circuits, semiconductor and process materials, crystal growth and wafer preparation, contamination control and yield, oxidation, rapid thermal processing, photolithography, steppers, X-ray & e-beam lithography, chemical mechanical polishing, doping, ion implantation, deposition (PVD, CVD, Epi), etching, metallization, wafer testing, formation of various devices, manufacturing technology and packaging.

Prerequisite: EEN901 or instructor approval.

EEN 905 Digital Design in HDL (3 credit units)

The course will introduce VHDL and Verilog, two IEEE standards of hardware design languages, skills of design and verification, synthesis consideration, timing/power effective designs.

EEN 906 (974) Electromagnetic Fields and Waves (3 credit units)

This course will introduce electromagnetic fields in vacuum and in matter, boundary value problems and Green's functions, retarded potentials, wave propagation, wave-guides and cavities, radiation, dispersion and absorption.

EEN 908 (920) Scientific Computing (3 credit units)

This course will cover fundamental scientific computing and optimization techniques used in various electronic engineering fields. The techniques include interpolation methods (linear and non-linear interpolation, piecewise interpolation, Splines, surface interpolation), solving equations and partial differential equations using numerical methods, optimizations (linear programming, dynamic programming, iterative method), approximations, Monte Carlo simulations. Parallel computing will also be introducing using clusters.

EEN 910 Integrated Circuit Design and Methods (3 credit units)

The course will be designed to bring students an overview picture of IC design industry. Various IC design methods, tradeoff and applications are introduced. The course projects will allow students to practice different approaches of Full-Custom design, ASIC/SOC design or FPGA design.

EEN 911 VLSI Design I – Circuit Design (3 credit units)

The course will bring fundamental considerations involved in VLSI chip design. Various circuit designs will be introduced to understand design concepts, techniques and tradeoffs in practical implementations, Physical design aspect of and global issues in chip designs, and Design considerations of circuit performance, size and power consumption.

Prerequisite: EEN910 or instructor approval.

EEN 912 VLSI Design II – Memory Design (3 credit units)

The course will be an advanced circuit design consideration and implementation. It will focus on various memory design concepts, techniques, and applications involved DRAM/SDRAM, SRAM/SSRAM, ROM, EPROM, FLASH, etc.

Prerequisite: EEN911 or instructor approval.

EEN 913 Microprocessor Design (3 credit units)

The course will introduce various microprocessor architectures, characteristics, and applications, and deliver to students a specific microprocessor design to understand each functional block design and design considerations.

Prerequisite: EEN910 and CEN922 or instructor approval.

EEN 915 Analog Circuit Design (3 credit units)

The course will involve Design and analysis of multi-stage BJT and CMOS analog amplifiers, Frequency response of cascaded amplifiers and gain-bandwidth considerations, Concepts of feedback, stability, and frequency compensation.

EEN 916 Mixed Signal IC Design (3 credit units)

The course will focus on the intersection of the digital and analog design worlds. The students will be expected to have basic analog circuit and digital design knowledge, and to have used the principal EDA tools like SpectreRF and Verilog. The course will cover SoC system design and

mixed signal subsystems such as A/D converters, digital PLLs, embedded CPUs with thermal sensors, DDR PHYs and others. Mixed-signal issues like substrate noise will be explored in detail. The course will also include a significant design project with a simple embedded CPU.

Prerequisite: EEN910 and EEN915 or instructor approval.

EEN 917 Advanced Analog IC Design (3 credit units)

The course will provide an understanding of analog circuit and systems design and complex CMOS IC issues. Topics include high-frequency amplifiers, high-Q oscillators, low-noise circuits, selecting passive components for minimum mismatch, non-linear systems, active filters, A/D and D/A converters, grounding and shielding, layout and system design. Students will design a medium-complexity analog circuit starting from performance and parametric specifications. The course will require heavy use of HSPICE and some electromagnetic modeling.

Prerequisite: EEN915 or instructor approval.

EEN 918 RF IC Design (3 credit units)

This course will cover fundamentals of CMOS RFIC design. The course will start with basic electromagnetics like high-Q inductor design, then moves into device modeling and layout issues. It will examine in detail the primary CMOS RF subcircuits like LNAs, power amplifiers, fractional N synthesizers, mixers and filters. A design practice will be done using SpectreRF, with the passive components designed using Sonnet or equivalent modeling tool. The circuits will be laid out using Virtuoso and the parasitics will be extracted using Assura.

Prerequisites: EEN917 or instructor approval. EEN906 is helpful.

EEN 919 Advanced RF IC Design (3 credit units)

This advanced course will introduce designs of local oscillators and baluns, supporting mixed signal circuits like A/D converters and baseband filter-amplifier blocks. The course will include a significant design project that is typically a subsystem like a power amplifier or low-noise amplifier. The design will be done using SpectreRF, the circuits will be laid out using Virtuoso, and the parasitic parameters will be extracted using Assura.

Prerequisites: EEN918 or instructor approval. EEN906 is helpful.

EEN 920 (954) ASIC Design I (3 credit units)

The course will focus on ASIC design principle, consideration, and design implementation with logical design, verification, synthesis, and design analyses of function, timing, power, signal integrity and others. A design project with a front-end ASIC design flow will be assigned for practice.

Prerequisite: EEN905, EEN910 or instructor approval.

EEN 921 (958) FPGA Design (3 credit units)

The course will introduce the principle of Field Programmable Gate Array, various FPGA architectures, design flow, application advantages

vs. limitations. Practicing with course projects, students will develop solid understanding and hands-on experience in this exciting digital design area.

Prerequisite: EEN905 or instructor approval.

EEN 922 Design Verification (3 credit units)

The course will introduce logical verification concepts, considerations and applications. Advanced algorithms applied to coverage, challenges of speed, scalability, verifiability, and skills and trade-offs will be discussed.

Prerequisite: EEN920 or instructor approval.

EEN 923 Design Analysis of Integrated Circuit (3 credit units)

The course will cover a wide variety of topics relating to analysis for integrated circuit design. It will emphasize state-of-the-art techniques and both the theoretical basis for the methods as well as the application of results to practical problems, including timing, power, noise, and effect of manufacture processing.

Prerequisites: EEN920 or instructor approval.

EEN 924 (922) Design for Testability (3 credit units)

The course will teach students the fault modelings including single stuck-at fault (SSF) and multiple stuck-at fault, fault equivalence and dominance, fault simulation techniques: serial, parallel and concurrent, testing algorithms for SSF and bridge fault, functional testing, PLA testing. Memory testing; and will also introduce commercial tools and their capabilities.

Prerequisites: EEN920 or instructor approval.

EEN 925 (955) ASIC Design II (3 credit units)

The course will emphasize on back-end ASIC design implementation with floorplan, placement and routing, layout verification and parameter extraction, design for manufacture and post-layout analysis with consideration of timing-driving and power-aware layout. A design project with a back-end ASIC design flow will be assigned for practice.

Prerequisite: EEN920 or instructor approval.

EEN 927 VLSI Design to Silicon (3 credit units)

The course will provide students on-hand chip design practice. Students will complete a full-custom chip design from circuit to silicon. With given technology and design spec, students will start their own designs from transistor-level schematic design and verification, to the completion of layout and layout verification, and run LPE and whole chip post-layout verification. The designs will be taped out for manufactory and chips will be packaged and tested.

Prerequisite: EEN911 or instructor approval.

EEN 928 (919) Low Power IC Design (3 credit units)

This course will cover Design consideration and techniques for low power IC design, Power estimation and analysis at different design stages, Techniques and tradeoffs in high performance and power critical IC design.

Prerequisite: EEN910 or instructor approval.

EEN 929 (914) VLSI System Design (SOC) (3 credit units)

The course will introduce the method, consideration and analysis of System on Chip design fundamentals. VLSI architectures, systolic arrays, self-timed systems, system verification, design flow and implementation will be covered. System C and/or System Verilog will be applied for practice.

Prerequisite: EEN913 or instructor approval.

EEN 930 (950) Quantum Devices (3 credit units)

The course will introduce the knowledge of principles and operational characteristics of modern semiconductor devices, especially nanometer scale structured semiconductor devices. Topics includes quantum transport, quantum interference, quantum noise, transport and optical properties of low dimensional semiconductor devices, quantum optical devices, high electron mobility transistors, single electron transistors, super conducting devices, and quantum transport in mesoscopic structures.

EEN 931 Nanotechnology I (3 credit units)

Nanotechnology is the field of fabrication, characterization and manipulation of nanometer scale objects. The course will analyze in details a step-by-step description of the equipment, facilities processes and process flow needed to fabricate small devices and structures, and cover fabrication challenges and break-throughs in semiconductor nanotechnology. Students will learn processing and manufacturing concerns including process control, contamination, yield, and processing interaction, and also practice design process flows to build micro- and nano-scale devices and systems.

Prerequisites: EEN930 or instructor approval.

EEN 932 Nanotechnology II (3 credit units)

The course will be a further study on quantum behaviors which mechanic, electronic, magnetic, optical and chemical properties open the door to a new domain of engineered nanostructures and nanodevices, with enormous applications in many aspect of life. Students learn small scale quantum phenomena, device fabrication, analysis and synthesis processes, instrumentation for characterization, integration of nanodevices and systems.

Prerequisite: EEN931 or instructor approval.

EEN 933 (962) Circuit Network Analysis (3 credit units)

The course will introduce linear graph concepts and definitions, graph matrices and Kirchhoff's equations, matrix loop, node and cutset equations with generalized branch representation, and topological formulas for network functions and their application to computer-aided analysis.

EEN 934 (964) Computer-Aided Simulation of Electronic Circuits (3 credit units)

The course will introduce DC and AC analyses of linear networks, DC analysis of nonlinear resistive networks, linear and nonlinear capacitors and inductors, circuit models for semiconductor devices, and the stability region of numerical integration algorithms.

Prerequisite: EEN933 or instructor approval.

EEN 935 (925) Introduction to MEMS Design (3 credit units)

The course will introduce MEMS design fundamentals, micro-fabrication techniques and analyze a variety of MEMS structures including switches, accelerometers and microcavities.

Prerequisite: EEN901, EEN906 or instructor approval.

EEN 936 Advanced MEMS Design (3 credit units)

The course will apply parametric design and optimal design to micro-electro-mechanical systems with an emphasis on design and micro-mechanical simulation.

Prerequisite: EEN935 or instructor approval.

EEN 938 (924) Signal Integrity of High-Speed Digital Circuits (3 credit units)

The course will introduce the issues in signal integrity of high-speed digital circuits, identify signal integrity problems; circuit analysis for transient signals in lumped and distributed circuits; reflection and crosstalk; analysis of coupled-line systems; current measurement processes for high-speed signals; and also the current design techniques, rules and procedures.

Prerequisites: EEN905, EEN910 or instructor approval.

EEN 940 Introduction to Computer Vision (3 credit units)

The course will focus advanced techniques in image processing. Challenges of data collection with various sensors and cameras, high-level algorithms and real-time implementation will be discussed. 2D and 3D objectives recognition and reconstruction will be covered with practice.

EEN 941 Digital Signal Processing (3 credit units)

The course will focus an advanced techniques in signal processing. Stochastic signal processing, parametric statistical signal models, and adaptive filterings. Application to spectral estimation, speech and audio coding, adaptive equalization, noise cancellation, echo cancellation, and

linear prediction.

EEN 942 Digital Image Processing (3 credit units)

The course will be designed to introduce fundamental knowledge of basic image processing algorithms and systems. It will cover image acquisition, image data structures, images operations such as, geometric, arithmetic, logical convolution, transforms, calibration, correction, enhancement. Matlab will be used to help students grasp the basic skills of processing images on digital computers.

Prerequisite: EEN920 or instructor approval.

EEN 943 Advanced Digital Image Processing (3 credit units)

This course will be designed to introduce techniques and implement algorithms for advanced digital image processing. It will cover segmentation, shape and texture, Morphology, recognition and classification. And compression techniques, real-time image and video coding will be covered. Matlab is used to implement and test various image processing algorithms.

Prerequisite: EEN942 or instructor approval.

EEN 948 (966) Computer Network Systems (3 credit units)

The course will introduce the principles and techniques in computer network design and architecture. Topics will include OSI and TCP/IP reference models, packet switching, data link control, medium access control, routing algorithms and transport layer control. In addition, an introduction will be given for client-server model, LAN, WAN and network performance evaluation.

EEN 951 Computer Control Engineering (3 credit units)

The course will introduce the knowledge of block diagram & signal flow graph, modeling of electromechanical, hydraulic, pneumatic systems, state variable representation & transfer functions, matrix methods in state space, controllability, observability, and canonic form transformations, pole placement with state feedback and integral control, time domain analysis & stability criteria, root locus & method for output feedback design, and control system simulation.

EEN 952 Digital System Design (3 credit units)

The course will introduce the knowledge of frequency, stability, design in the frequency domain, introduction to computer system design and technique, sampling, A/D & D/A conversion, digital redesign, minimum norm and root locus design, state space design, and state observers.

Prerequisite: EEN951 or instructor approval.

EEN 953 Machine Learning (3 credit units)

The course will introduce Artificial intelligent theories, algorithms, and applications; Detection and analysis; Self-learning system; and Project of

robot system design.

Prerequisite: EEN920 or instructor approval.

EEN 958 Advanced System Design Using FPGA (3 credit units)

The course will focus on FPGA (Field Programmable Gate Array) principles, consideration and implementations. It will emphasize on the use of FPGA developing system to implement a design specification.

Prerequisites: Knowledge of HDL (Hardware Description Language), VERILOG or VHDL.

EEN960 Parallel Computing (3 credit units)

The course will focus on parallel computing frameworks and techniques. It will cover cutting-edge techniques which including multiprocessing, multithreading, synchronization, cluster/MPI, cell computing, general purpose GPU (CUDA/STREAM), and stream computing. The course project will be issued for solving/benchmarking some computing intensive problems, such as Monte-Carlo simulations, partial differential equations, image processing, etc, using different parallel computing frameworks.

Prerequisite: EEN908 or instructor approval.

EEN 961 (967) Fundamentals of Communication Systems (3 credit units)

The course focuses on the analysis, principle, and application of the communication systems, both digital and analog. Students will learn Fourier techniques and their usages in communication systems, brief review of probability theories, concept of information theory, different modulation and demodulation techniques.

Prerequisite: EEN941 or instructor approval.

EEN 962 Designs of Embedded Systems (3 credit units)

The course will focus on design methodologies and foundations; Platform-based design and communication-based design and their relationship with design time, re-use, and performance; Models of computation and their use in design capture, manipulation, verification, and synthesis; Mapping into architecture and system platforms; Scheduling and real-time requirements; Performance estimation; Simulation techniques for highly programmable platforms; and Synthesis and successive refinement.

EEN 963 (&966) Advanced Communication Systems (3 credit units)

The course will focus on up-to-date digital communication systems and technologies. It will cover introductory information and coding theory, baseband transmission systems, optimum receiver structures, intersymbol interference, equalization, various modulation and corresponding demodulation schemes and application of digital systems.

Prerequisite: EEN961 or instructor approval.

EEN 964 Introduction to Medical Image Systems (3 credit units)

The course will cover X-ray including CT, Ultrasound, Radionuclide, and Magnetic Resonance Imaging. The focus is on the physical principles, instrumentation methods, and imaging algorithms. The medical interpretation of images, and the clinical, research and ethical issues in medical imaging will also be included.

Prerequisite: EEN942 or instructor approval.

EEN 965 Applied Linear Systems (3 credit units)

The course will introduce state equations, and their time and frequency domain solutions, methods for calculating state transition matrix, modes suppression and excitation, Z-transform and inverse transform sinusoidal steady state analysis and digital filtering, stability in linear time-invariant systems.

EEN 966 Network Storage Systems (3 credit units)

This course will introduce distributed systems designed to offer access to storage resources over a network. It will cover network file system, network storage architecture, security issues in data transferring over networks, performance measurement, file service types, and file servers. In addition, topics of data redundancy, data throughput, Samba, and load balancing will be covered.

EEN 970 Introduction to Microwave Engineering (3 credit units)

The course will introduce high frequency theory, the basic performance, bandwidth, and manufacturing yield of RF and microwave networks. Students will learn Electromagnetic field theory and mathematical details; the applications of different matrices and their limitations; and the basis and use of Smith chart, and filter designs.

EEN 971 Introduction to Wireless Communication Systems (3 credit units)

The course provides an overview of wireless communication systems in use today as well as some of the emerging systems. It presents wide range of wireless applications, from cell phones to wireless local area networks (WLAN) to satellite communications. It will examine the pros and cons of wireless communication and describe both infrared and radio technologies. Finally it will survey the representative 2G, 3G and 4G cellular systems as well as representative WiFi WLAN systems.

Prerequisite: EEN961 or instructor approval.

EEN 972 Wireless Communication Networks (3 credit units)

The course will present wireless networking over a range of applications, from cell phones to wireless local area networks (WLAN) to broadband wide area network links to satellite. It will cover representative systems of the first, second, third and fourth generation cellular systems as well as those of WLAN and Wireless Personal Area Network (WPAN). The coverage will focus on the MAC and PHY layers and will emphasize the

recent and emerging systems. It will also introduce mobile IP and Wireless Application Protocol (WAP).

Prerequisite: EEN971 or instructor approval.

EEN 973 Wireless Communication Development (3 credit units)

The course will introduce wireless communication and briefly trace its history. It will cover the propagation loss and both long-term and short-term fading in wireless channel. It will describe in details how the time, frequency and antenna diversities can be used to effectively mitigate the effects of fading. Finally, it will cover the principle of cellular communications and introduce multiple access and interference management in the cellular environment.

Prerequisite: EEN971 or instructor approval.

EEN 974 Advanced Wireless Communications (3 credit units)

This course will build on the concepts covered in EEN 973. The topic covered here include: capacity of wireless channels, multi-user capacity and multi-user diversity, MIMO channel capacity and spatial channel modeling, MIMO receiver design. The concepts will be illustrated using examples from the WiMax and LTE systems.

Prerequisite: EEN973 or instructor approval.

EEN 975 High Speed Digital Systems (3 credit units)

The course will focus on the practical and theoretical aspects necessary to design modern high-speed digital systems, including Transmission line theory, cross talk, connectors, packages, and vias, modeling, SSN (Simultaneous Switching Noise), power delivery system, driver/receiver buffer modeling, clock distribution, digital timing analysis, design methodologies, and other advanced topics.

Prerequisite: EEN906 or instructor approval.

EEN 977 Green Energy (3 credit units)

The course will focus on solar energy, specially the principles and operational characteristics of modern solar cells. Main topics to be covered will be solar energy principles, principles of diode, solar cell, concentrated solar cell, thin film solar cell, multi-cell structure, power conversion (DC to AC, grid), power storage (battery, fuel cell, etc) and other green energy source (hydro, wind, biomass, etc) comparison.

Prerequisite: EEN901 or instructor approval.

EEN 991 Special Topics in Electrical Engineering (1-3 credit units)

The course will offer a relatively new subject that is not currently available in the catalog, but will be of great relevance to electrical engineering. It will consist of lectures, readings, homeworks, presentations and projects determined by the instructor.

EEN 993 CPT (1-3 credit units)

Curricular Practical Training is defined to be alternative work-study, internship, cooperative education, or any other type of required internship or practicum that is offered by sponsoring employers through cooperative agreements with ITU. As part of each CPT course the student requires to write a CPT report and submit it, together with a questionnaire filled out by the employer, to ITU. CPT course can be taken repeatedly up to three trimesters.

EEN 996 Independent Study (1-3 credit units)

By arrangement with instructor. The course will be independent study of topics of special interest in electrical engineering under the direction of an instructor who is knowledgeable in the field. It will consist of readings, homeworks, tests, presentations and projects determined by the instructor.

EEN 998 Project (1-3 credit units)

By arrangement with project advisor. Student will conduct independent research of an approved topic in computer or electrical engineering, prepare a technical report, and defend it in front of a faculty advisor.

Prerequisite: Graduate standing

EEN 999 Thesis (6 credit units)

By arrangement with thesis advisor. A research will be expected toward the M.S. or PhD degree if thesis topic is approved. Students will conduct independent research in computer or electrical engineering, prepare a thesis, and defend it in front of a committee composed of a number of faculty designated by department chair.

Prerequisite: Graduate standing

ENGINEERING MANAGEMENT (SEM)

SEM 901 Introduction to Software Management (3 credit units)

Through seminar discussions, collaborative practice, and individual investigation, students assess real software businesses from marketing, business strategy, financial, and overall business perspectives, applying fundamental methods, models to frameworks. Throughout the course, students are also coached on effective business communication.

Prerequisite: Graduate Standing.

SEM 902 Managing Software Professionals (3 credit units)

This class will address a series of issues related to coordinating and managing the various tasks associated with a distributed software development project. In this context, you consider a variety of issues related to hiring, retention, and dismissal of employees, as well as cultural considerations of managing a diverse team.

Prerequisite: Graduate Standing.

SEM 903 Software Product Strategy (3 credit units)

Students will learn to use market analysis techniques to evaluate opportunities for software products. They then use this information to explore technical feasibility, to expand the product definition, create a product roadmap, and presenting findings to senior management.

Prerequisite: Graduate Standing.

SEM 904 Management of Outsourced Development (3 credit units)

Student project teams analyze the business rationale, risks, and benefits for outsourcing some or all of a new software project and present its recommendations for outsourcing to senior managers. The analysis includes what tasks should be outsourced, how to select suppliers, and how to manage the outsourced work effectively.

Prerequisite: Graduate Standing.

SEM 905 Open Source Software (3 credit units)

Students acquire fundamental skills and awareness of recent technical and business issues regarding open source software. Emphasis is on understanding the impact of open source software on the software industry including licensing and commercialization issues, corporate software evaluation techniques, and business models.

Prerequisite: Graduate Standing.

SEM 906 Enterprise Architecture (3 credit units)

In this class students will learn the proposal and evaluation of architectural alternatives for software systems, including both packaged and open source applications. Study includes integration mechanisms, inclusion of pre-built components, and adherence to standards to satisfy a given set of business, technical, and functional requirements.

Prerequisite: Graduate Standing.

SEM 907 Software Product Marketing (3 credit units)

Student teams develop marketing plans for new software products or services, identifying programs needed to support the cost-effective launch and ongoing marketing activities for the software. Teams define the product positioning and the product marketing initiatives, including pricing, channel management, service agreements, product collateral, sales, marketing communications, and partnerships.

Prerequisite: Graduate Standing.

SOFTWARE ENGINEERING (SEN)

SEN 900 Software Engineering I (3 credit units)

The lessons for this course are the same as CSN 800. This course meets 3 hours per week for 16 weeks. Requirements specification techniques, software design technique and tools, implementation issues, and software engineering and programming languages.

Prerequisite: CSN 882

SEN 901 Security Programming (3 credit units)

This Secure Programming course gives students a good working knowledge of common programming problems and how to avoid them in their code. Students also gain the ability to review existing programming for vulnerabilities and how to rectify them. This course will help students get started on the right foot with Windows security APIs, Java Security, and give the students the foundation of knowledge needed to understand even the most obscure security concepts. It will also introduce the students to techniques for adding security-based features to various applications. Through carefully designed code and interfaces, students will be able to extract security information from objects easily and protect objects with a minimum of code. This is a programming and code-oriented class with lots of hands-on projects and exercises.

Prerequisite: SEN909 or SEN964

SEN 908 Visual Basic Programming (3 credit units)

This course will provide students with the proper Visual Basic environment knowledge, and programming language skills needed to write applications with sophisticated Graphical User Interfaces (GUI) that run on an MS Windows Operating System.

Prerequisite: CSN 922

SEN 909 Advance OO Programming with C++ (3 credit units)

Students will learn the syntax of C++, classes and objects, encapsulation, inheritance, polymorphism, design for reuse, and programming with objects.

Prerequisite: CSN 381

SEN 910 GUI Programming Using Java (3 credit units)

This course will teach students about Graphical User Interface (GUI) development using Java Swing. The majority of software today depends on a GUI for user and software interaction. More and more software companies are increasing efforts towards GUI development since its quality can mean the success or failure of their product. In this course, students will acquire the essential knowledge and skills to create a user-friendly GUI that maintains responsiveness and stability, and complies with the most natural human expectations and reactions on a computer screen.

Prerequisite: SEN 964

SEN 911 Web Graphic Design (3 credit units)

Web Graphic Design takes into consideration the art and profession of selecting and arranging visual elements – such as typography, images, symbols, audio, video and colors – to convey a message to an audience. Sometimes graphic design is called "visual communications." Website creation is a collaborative discipline in which Web Graphic Design plays

an essential role: writers produce content while photographers and illustrators create images that are then used by the Web/Graphic designer to incorporate into a complete visual message – hence the website.

SEN 920 Computer Algorithms (3 credit units)

Students will learn about algorithm design, sorting algorithms, searching, graph algorithms, stacks, queues, and dictionaries implementations.

Prerequisites: AMN 840, CSN 882 and SEN 909

SEN 929 Automata, Computability, and Complexity (3 credit units)

This course introduces mathematical models of computation and the finite representation of infinite objects. It covers finite automata and regular languages, context-free languages, Turing machines, partial recursive functions, Church's Thesis, undesirability, reducibility and completeness, time complexity and NP-completeness, probabilistic computation, and interactive proof systems.

SEN 930 Software Testing & Quality Engineering (3 credit units)

This course is a amalgam of modern testing techniques based on black box or behavior testing, control flow and data flow testing, transaction based and finite state testing, domain testing, reliability testing, software reliability models, tools, and automation.

Prerequisites: SEN 500, SEN 509 or SEN 564

SEN 932 Software Testing & Automation Via Perl & Shell Script (3 credit units)

Learn traditional (UNIX) software tools, such as shell scripts, Tcl/Tk scripts, Perl, make, and possible .BAT (Win32) files. Practical applications of these tools involve regression tests, automate software releases, handle email and perform general computer automation.

Prerequisites: CSN 864 or CSN 881, and SEN 956

SEN 934 Database Management Systems (3 credit units)

This course will teach students about data definition and manipulation languages (related algebra and calculus). Students will also learn about the architecture of database management systems, transaction management, concurrency control, and security, distribution and query optimization.

Prerequisite: CSN 878

SEN 936 Software Tools (3 credit units)

Students will develop techniques for building tools and interfaces, and designing for different applications.

Prerequisite: SEN 500

SEN 939 Software Innovation and Creation (3 credit units)

This course introduces innovation concepts, the theory behind, methodologies, and practical applications for software development. It

also covers software patent strategies, the boundary between patentable and non-patentable software, and intellectual patent laws.

SEN 941 SE I, Basic Software Engineering Elements (3 credit units)

This course focuses on techniques used throughout the software engineering process. The software life-cycle and modeling techniques for requirements specification and software design are emphasized. Both traditional and object-oriented approaches are addressed. During this course students will receive hands on experience in the form of a group project, challenging them to develop a working prototype complete with requirements specifications, and other objectives. This is a project-based class where students are expected to start from a narrative of the problem, and then specify output reports, analyze the problem using special data modeling techniques (entity-relationship, relational, object-oriented), design data structures, and then follow through with a prototype. This course represents 45 contact hours required for 3 trimester units or credits.

SEN 942 SE II, Software Engineering Methodologies (3 credit units)

This course introduces the framework that is used to structure, plan, and control the process of developing a software system. This course covers the methodologies of waterfall, spiral method, scrum, and extreme programming, and their recognized strengths and weaknesses as well. These methodologies are often bound to organizations, tools, and projects.

SEN 943 Principles of Software Testing (3 credit units)

The most important testing practices will be explained using scenarios and scenario-based development and testing. Explanation and practicing of test cases, testing procedures, strategies for Software Testing, black box/glass box/gray box testing. Unit testing, integration testing, regression testing, and user acceptance testing/ Beta Testing.

SEN 944 Software Refactoring with Design Patterns (3 credit units)

Students will learn about improving the design of existing code as well as various techniques and refactoring patterns. Other topics covered include the following: Increasing software understandability and productivity, reducing software complexity, aging, and maintenance costs. Refactoring in the context of agile development, during debugging and code review. Refactoring tools for important languages and OSs. Various categories of refactoring, small and big refactoring. Refactoring of UML design models.

SEN 950 Client Programming with JavaScript (3 credit units)

SEN 951 SAP ABAP Programming (3 credit units)

ABAP is the language used for programming SAP's Web Application Server component of its Net Weaver platform for building business applications. This course introduces the ABAP language environment, syntax checking inclusion, code generation and runtime system, and different types of ABAP Programming.

SEN 952 SAP Tools (3 credit units)

SAP Query is a powerful tool to get reports without the normally required complex programming knowledge. In this course you will learn to create and design your own SAP Query reports. This course covers two SAP Query scenarios: (1) creating a simple SAP Query report when all information is available in a single table, and (2) creating an advanced join table SAP query when the information required is spread in different tables.

SEN 953 Programming Language Concepts (3 credit units)

This course will cover a survey and critical comparison of a variety of computer languages. Issues include syntax, semantics, control structures, and data representation. There will be a discussion of both design and implementation of both imperative and declarative languages. This course represents 45 contact hours of instruction required for 3 trimester units or credits.

SEN 956 Unix Operating System (3 credit units)

This course will teach students about using Unix, fundamental Unix commands, pipes and redirection, shells, processes, Unix system administration basics, internals of Unix, history of operating systems.

Prerequisite: CSN 882

SEN 957 GUI Development with Java (3 credit units)

This course teaches students the principles of Graphical User Interfaces (GUI) and how to develop GUIs using Java's AWT and Swing libraries. The proper understanding and ability to use these libraries is of paramount importance in almost all of today's software development and is not limited to development of Android Phone applications. The learning and programming of GUIs is most effective and rewarding using these Java libraries, as they are considered by many as the best, simplest and most elegant of all GUI development tools and libraries. Most Java GUI developers disregard the use of any visual development tools, as the design and concept of Java's GUI libraries are so natural and intuitive, that visual development tools seem redundant. Additionally, students will learn the basic principles of graphical user interfaces, the widget hierarchies, event handling mechanisms, event queue management, thread handling etc. It is in most ways a parallel course to SEN 961 except for the language and component libraries used.

SEN 958 Android Phone Application Development (3 credit units)

Teaches the use of SDKs released by Google to facilitate the development of applications for the Android Phone. Android Phones are Linux based and programmed in Java. This alone bodes very well for any software development on that platform for the following reasons: Linux OS is the most powerful and easiest to manage of all operating systems, and the Java programming language has superior GUI development capabilities.

Knowledge of SDKs is certainly an advantage when developing for the Android platform.

SEN 959 Operating System (3 credit units)

This course will cover the basic principles of operating system design and implementation. Students will learn about concurrent processes, inter-process communication, job and process scheduling; deadlock. Overcoming issues in memory management (virtual memory, segmentation, and paging) and auxiliary storage management (file systems, directory structuring, and protection mechanisms) are also included in this course.

SEN 960 Compiler Design (3 credit units)

This course covers the following topics: Parsing: comparison of LL versus LR. Use of a lexer and parser generator. Formation of syntax trees. Name management via a symbol table. Type resolution. Code generation issues. Simple optimizations, such as peephole optimizations, strength reduction, and constant folding.

Prerequisites: SEN 920 and SEN 964

SEN 961 GUI Development with NS Library (3 credit units)

The NextStep Library of GUI Components is an elegant design of classes for GUI development, written in Objective-C. It is conceptually much clearer and easier to use than the Microsoft Visual C++ Library, and uses basic programming features. Since it is the platform of choice for all GUI development on Mac and iPhone, its knowledge is quite relevant as the Macintosh empire continues to expand. This class teaches the basic ideas of GUI development using NS in terms of its approaches, components, uses, and event and exception handling mechanisms.

SEN 962 Web Page Design Using HTML and Java (3 credit units)

This course offers an introduction to how the combination of JavaScript with HTML can make a website more powerful and dynamic. The topics covered are as follows: Create dynamic images, frames, dynamically update pages, JavaScript and cookies, plug-ins, cascading style sheets, and debugging. After finishing this course, the student will have a better picture of client side vs. server side, HTML vs. JavaScript and integrate JavaScript into web pages to create dynamic images, add smart forms, and detect which browsers and plug-ins that visitors are using so that one can customize the content.

Prerequisite: CSN 364 or CSN 381

SEN 963 Unix, Perl and Web Management (3 credit units)

Learn how to use UNIX commands effectively. Students will be provided a Linux account by ITU. Understand UNIX basic: files, pipes, jobs, redirection, globing. Basic Perl and Java Script. Learn how to design, write, and maintain a small website. Learn how to write interactive web

pages using either Perl CGI scripts or JavaScript. Learn how to run a Web server on UNIX.

Prerequisite: SEN 556

SEN 964 Advance OO Design Using Java (3 credit units)

This course is the same as CSN 464, meeting 3 hours per week. Introduction to Java, Application versus Applet, Installing Java, variables, types, expressions, control constructs, java. Lang, Strings, Vectors, Hash tables, File I/O, The Java AWT, components, events, layout managers, Improved GUI libraries, Threads, Synchronization, Java intervals, Sockets, and Writing a server and a client.

Prerequisites: CSN 881 and CSN 881

SEN 965 iPhone Application Development I (3 credit units)

This is an introductory course about iPhone Application development. Students will be given a comprehensive overview of the possibilities of iPhone application development, the languages and tools used: the Xcode IDE, the Interface Builder, the iPhone simulator, and develops example applications for all areas: Graphics, Animation, Audio, Video, Web access etc.

SEN 966 iPhone Application Development II (3 credit units)

The successor course for SEN965 I. This course goes further in depth into the world of iPhone Application development from the programming perspective. The lessons learned from this course will provide students with the abilities to apply advanced techniques when developing iPhone Applications allowing programmatical creation of existing GUI components without the often limiting use of the Interface Builder, allowing the design of new GUI components, and allowing a solid understanding of the event handling, threading and exception mechanisms. In short, it gives the student designer a mastery of the development tools, knowledge of the NS library, and thus the power to develop even the most complex and demanding Mac and iPhone applications, for which only the developer's own imagination is the limit.

SEN 969 Computational Models of Discourse (3 credit units)

This course is an introduction to automatic discourse processing. It covers methods and models that apply to image and speech processing. The detail methods include discourse structure, models of coherence and cohesion, recognition algorithms, and image segmentation as well as machine learning methods for discourse analysis.

SEN 970 OOP with Objective-C (3 credit units)

All application development on the Mac and on the iPhone is done in Objective-C and its solid knowledge is a requirement for all development on products such as the Macbook and iPhone. Even though Objective-C is as old as C++ it is in the simplicity of its features and concepts that make it more modern than C++. Also, Objective-C offers features that neither

C++ nor Java has. This course will provide students with an advanced understanding of Objective-C, and will keep them from being limited to only superficial application development. A useful preparatory curriculum for iPhone application developers must include this course. This course adds to our traditional successful series of OOP courses that we continue to offer for the important Object Oriented languages.

SEN 971 Storage Area Network (SAN) Implementation (3 credit units)

In this comprehensive and practical course, the instructor will take you through all aspects of storage networking. First, the theory of how a SAN can help consolidate conventional server storage onto networks will be explained. Then students will understand how a SAN can help make applications highly available no matter how much data is being stored, which, in turn, makes data accessibility and management faster and more convenient. Along the way, the course will provide students with practical advice on the design and implementation of this new technology and the benefits of adopting storage networking. Students will understand the theory of SAN technology, and appreciate the benefits of SAN. This course provides a detailed up-to-date coverage on the following topics: The evolution of computing in data centers leading to SANs, some killer applications for SAN technology, storage networking theory and its meaning to an enterprise information processing architecture, the software components required to implement SANs, and some practical issues in SAN implementation and management.

Prerequisite: CEN 963

SEN 974 Client/Server and The Internet (3 credit units)

This course covers the Client/Server paradigm in the context of the Internet: this includes CORBA architecture, Java programming language and its support to applications and applets. The core of this course is focused on Java extended APIs and their usage including: Sockets, Remote Method Invocations (RMI), Java IDL, Java Security APIs and Java Database Connectivity (JDBC).

Prerequisite: SEN 509

SEN 976 Theory of Parallel Systems (3 credit units)

This course introduces theoretical foundations of general-purpose parallel computing systems including languages, architecture and algorithms. It also covers multithreading, synchronization, race detection, load balancing, memory consistency, routing networks, and message-routing algorithms.

SEN 978 Knowledge-Based Applications Systems (3 credit units)

This course covers knowledge representation, knowledge acquisition and application development which includes the knowledge base and the inference mechanisms. Additionally, there will be some basic techniques of Artificial Intelligence included in the lessons. Students will have the opportunity for hands-on experience by building a knowledge-based application.

SEN 979 Cryptography and Cryptanalysis (3 credit units)

This course introduces the modern cryptography including the fundamental cryptographic primitives of public-key encryption, digital signatures, pseudo-random number generation, and basic protocols and their computational complexity requirements. It also introduces the study of methods for obtaining the meaning of encrypted information.

SEN 980 Database Systems (3 credit units)

This course covers the following topics: E-R and E-C-R model, view integration, relational database, network database, hierarchical database, and physical database design.

Prerequisite: An undergraduate course in Data Structure or CSN 882

SEN 981 Pervasive Human Centric Applications (3 credit units)

This course introduces applications for personal device assistants such as mobile phone, GPS, or iTouch. These applications include speech processing, vision, GPS, and more. The applications will run on handheld devices such as iTouch, and cell phones such as iPhone or Android-based phones.

SEN 982 Oracle Database Architecture/Administration I (3 credit units)

The course is the same as CSN 482, meeting 3 hours per week. It is composed of two parts: Oracle Architecture and Administration. The first part gives a comprehensive picture of Oracle architecture and discusses the concept of Oracle database and instance. The second part shows students how to create Oracle database, allocating system storage and planning for future storage requirements, creating and modifying database storage structure and objects, and controlling and monitoring user access to the database.

Prerequisite: SEN 980

SEN 983 Oracle Database Architecture/Administration II (3 credit units)

This is a continuation of SEN 982. It covers the availability and scalability issues, Oracle database architecture, backup/recovery concept, Oracle backup/recovery configuration, types of failures, and the usage of high availability features in Internet applications.

Prerequisite: SEN 582

SEN 984 UNIX Networking Programming (3 credit units)

The course will cover in detail the different Interprocess Communication (IPC) facilities available under the UNIX operating system to develop distributed applications in a network environment. Distributed application components can be executed on the same machine, or on different machines, or a combination. These IPC facilities have two main attributes, the IPC interface and network protocol. The course covers in detail the following interfaces: pipes, FIFO, shared memory, message queues, semaphores, sockets, system V Transport Layer Interface (TLI), and Remote Procedure Calls (RPC). In addition, we cover a useful set of network routines that simplifies distributed programming.

Prerequisites: CSN 881, CSN 882 and SEN 956

SEN 985 Artificial Intelligence (3 credit units)

This course introduces the foundation of simulating (or creating) intelligence from a computational point of view. It covers the techniques of reduction, reasoning, problem solving, knowledge representation, and machine learning. In addition, it covers applications of decision trees, neural nets, SVMs and other learning paradigms.

SEN 986 Software Design Using Unified Modeling Language (UML) (3 credit units)

This course is an introduction to object-oriented principles of software design using the Unified Modeling Language (UML). Object oriented systems offer the promise of constructing highly modular and reusable software components. In this course we will discuss what is meant by object oriented design from analysis, through system design to programming implementation. The course will focus on building the object-oriented (OO) analysis model for software engineering. Then it defines in depth principles of object orientation reviewing the characteristics that actually comprise a true object. The course covers the gathering of requirements for software design, software project organization & management, the role of design, use-case analysis, object modeling in software engineering and an introduction to design patterns. UML is presented in context throughout the discussion with emphasis on the practical application of OO principles and techniques, including the use of UML to solve real-world problems. Students are expected to write a detailed description of the design for each of the programs, incorporating UML models where appropriate. Students will implement their programs in the Java programming language.

Prerequisites: CSN 874, CSN 882. Students should be familiar with Java, C++ or other language, some web programming as well as basic data structure concepts and some UNIX.

SEN 987 Program Analysis (3 credit units)

This course introduces a variety of program analysis techniques and tools for software engineering applications. These techniques and tools are for static and dynamic analysis. Static analysis covers dataflow, type systems, model checking, decision procedures and theorem proving. Dynamic analysis covers testing, debugging for fault isolation, and model inference. This course also covers the tools to visualize the results of the program analysis.

SEN 989 Natural Language Processing (3 credit units)

This course introduces the theory and practice of human natural language processing, with an emphasis on linguistic and cognitive from an engineering perspective. It covers syntactic and semantic processing and machine learning. Additionally, this course introduces applications of

these methods and models in syntactic parsing, information extraction, and machine translation.

SEN 990 Introduction to Compiler Design I (3 credit units)

Parsing: comparison of LL versus LR. Use of a lexer and parser generator. Formation of syntax trees. Name management via a symbol table. Type resolution. Code generation issues. Simple optimizations, such as peephole optimizations, strength reduction, and constant folding.

Prerequisites: SEN 920 and SEN 964

SEN 991 Computer Graphics I (3 credit units)

Computer Graphics I is a study of the hardware and software principles of interactive raster graphics. Topics include an introduction to the basic concepts, 2-D and 3-D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages and graphics systems. Students will use computer graphics packages and implement fundamental computer graphics algorithms. This course represents 45 contact hours required for 3 trimester units or credits.

SEN 992 Computer Graphics II (3 credit units)

This course covers the following topics: Historical development of computer graphics, black and white graphics programming, color raster graphics, resolution and memory requirements, look-up tables, vector graphics and matrices, surfaces, rotation & scaling, graphics primitive, and transformation.

Prerequisite: AMN 840

SEN 994 X Window System Programming (3 credit units)

This course covers the spectrum of writing X window applications from the Xlib level up to Intrinsic, widget sets (Athena, Motif) and widget creation. Window managers, inter Xclient communication, resource specification.

Prerequisites: CSN 881 and SEN 956

SEN 996 1 Independent Study (3 credit units)

By arrangement with instructor. Independent study of topics of special interest in software engineering under the direction of an instructor, who is knowledgeable in the field. It may consist of reading, homework, tests, presentation and project determined by the instructor.

Prerequisite: Graduate standing

SEN 998 M.S. Project (3 credit units)

By arrangement with project advisor. A nominal number of 3 or 6 credit units is expected toward the M.S. degree if the Project Option is selected. Conduct independent research of an approved topic in software engineering, prepare a technical report, and defend it before a faculty advisor.

Prerequisite: Graduate standing

SEN 999 M.S. Thesis (3 credit units)

By arrangement with thesis advisor. A nominal number of 6 credit units is expected toward the M.S. degree if the Thesis Option is selected. Conduct independent research of an approved topic in software engineering, prepare a thesis, and defend it before a committee composed of a number of faculty designated by department chair.

Prerequisite: Graduate standing

BUSINESS ADMINISTRATION

ACTN 900 Financial Accounting (3 credit units)

This course provides an introduction to basic theory and methods of financial accounting. It is designed to offer managerial users the foundations of accounting concepts. The course helps the students understand the financial statement information. Focus will be on accounting for assets (e.g., Accounts Receivable, Inventories, Property, Plant and Equipment, Intangible Assets), liabilities (e.g., Bonds, Deferred Taxes) and owners' equity. Focus will be also on the presentation of the income statement through Net Income, revenues and expenses. Class sessions develop the understanding of the different steps of the accounting cycle, and of the financial statements that provide managers with the necessary information for decision-making.

Prerequisite: Graduate standing

ACTN 910 Managerial Accounting (3 credit units)

The course develops the understanding of the many ways that firms utilize costs. The students will learn the alternative costing methods, such as the relevant costs for decision making; the break even analysis and the contribution margin approach; absorption costing vs. direct costing; cost volume profit analysis. In addition, student will learn about other topics such as the decision-making involving joint costs, decentralization, product costing, job and process costing, and performance evaluation.

Prerequisite: ACTN 900 or equivalent

ACTN 920 Cost Accounting (3 credit units)

This is a study of cost accounting principles and procedures. The focus is on capital budgeting, standard costing, flexible budgeting, cost allocation, variance analysis, and transfer pricing.

Prerequisite: ACTN 910 or equivalent

ACTN 921 Intermediate Accounting (3 credit units)

This course is a review of basic accounting concepts. Topics include current assets, noncurrent assets and liabilities, including pensions and other employee compensation issues, leases, and debt financing. The course develops in depth understanding of equity accounts. It also discusses the single step and multiple step income statements, and the

comprehensive income, derivatives, and contingencies. In addition, students will learn about income statements with separated reported items, such as discontinued operations, extraordinary items, and the cumulative effect of a change in accounting principle (net of tax effect).
Prerequisite: ACTN 900 or equivalent

ACTN 923 Advanced Accounting (3 credit units)

This course develops an understanding of the financial accounting principles with the preparation of consolidated financial statements, segment disclosures, foreign currency adjustments, in addition to reorganizations and liquidations, mergers and acquisitions.

Prerequisite: ACTN 921 or equivalent

ACTN 924 Auditing (3 credit units)

This course covers generally accepted auditing standards (GAAS) as they apply to the study of audit preparation. Other auditing services, such as compilations and reviews, will be examined. In addition, the course covers the Code of Professional Conduct, which demonstrates the ethical responsibilities of the profession.

Prerequisites: ACTN 900 or equivalent

ACTN 925 Accounting Information Systems (3 credit units)

The course addresses the development and use of accounting information systems for managerial control and external reporting with emphasis on reporting objectives, management needs, documentation, security, and internal controls. The course focuses on concepts and principles of designing computer systems to perform accounting functions; and extensive use of applications of different microcomputer accounting software packages.

Prerequisites: ACTN 900 or equivalent

ACTN 926 International Accounting (3 credit units)

The knowledge of accounting requirements and the influence of environmental factors on the accounting systems both nationally and internationally becomes important to the accounting professional. Topics of financial accounting for international operations, multinational managerial accounting and control, comparative international accounting, international reporting issues, and international taxation are examined. The focus of the course is to solve the problems related to accounting for multinational corporations doing business in a global environment. This course covers the topics of currency translation and foreign currency gains and losses, and accounting for international accounting organizations.

Prerequisite: ACTN 910 or equivalent

ACTN 927 Tax Accounting Principles (3 credit units)

This course is an introduction to federal tax law, including the preparation of individual income tax form 1040 and related schedules. Tax accounting principles, such as the measurement of income, asset exchanges, capital

transactions, and business expenses are examined. Topics include corporate income tax, subchapter S, dividends, and liquidating distributions. The course also provides tax knowledge through identification of significant differences between tax and financial accounting.

Prerequisite: ACTN 900 or equivalent

ACTN 928A Payroll Accounting (2 credit units)

This course examines the payroll records, regulations, and laws related to payroll accounting. It provides the students skills on the preparation of all payroll forms, schedules, and records. The course will also include a study of the computation of earnings and withholdings. Students will learn how to compute wages and salaries, withholding for social security and income taxes.

Prerequisite: ACTN 900 or equivalent

ACTN 928B Payroll Tech Accounting (1 credit units)

This course teaches the use of microcomputers for accounting information such as computing wages; calculating social security, income, and unemployment taxes. Emphasis is placed on preparing appropriate payroll tax forms; and journalizing and posting payroll transactions.

Prerequisite: 928B should be taken concurrently with 928A

ACTN 929 Federal Personal Income Taxation (3 credit units)

This course is an introduction to the federal income taxation of individuals. Topics include the concept of income, exclusions from income, personal and business deductions, and taxable income.

Prerequisite: ACTN 900 or equivalent

ACTN 930 Federal Corporate Taxation (3 credit units)

The course is an introduction to the federal income taxation of corporation. Topics include the concept of contribution, formation, stock dividends, liquidation, and acquisition.

Prerequisite: ACTN 900 or equivalent

ACTN 940 Federal Partnership Taxation (3 credit units)

The course is an introduction to the federal income taxation of partnership. Topics include the concept of formation, operation of a partnership, sales of partnership interest, termination, and death of a partner.

Prerequisite: ACTN 900 or equivalent

ACTN 991 CPA Exam: Auditing and Attestation (3 credit units)

This course develops an understanding of the auditing process and the role of internal and external auditing in an organization. The course covers auditing procedures, Generally Accepted Auditing Standards

(GAAS) and other standards related to attestation engagements. The auditing and attestation section of the CPA exam tests knowledge in the context of five broad engagement tasks: plan the engagement, evaluate the prospective client and engagement, decide whether to accept or continue the client and the engagement, and enter into an agreement with the client; consider internal control in both manual and computerized environments; obtain and document information to form a basis for conclusions; review the engagement to provide reasonable assurance that objectives are achieved and evaluate information obtained to reach and to document engagement conclusions; and prepare communications to satisfy engagement objectives.

ACTN 992 CPA Exam: Business Environment and Concepts (3 credit units)

The Business Environment and Concepts section tests knowledge of general business environment and business concepts that candidates need to know in order to understand the accounting implications of transactions. Topics in this section include knowledge of business structure; limited liability companies (LLC), limited liability partnerships (LLP), and joint ventures; economic concepts essential to obtaining an understanding of an entity's business and industry; financial management; information technology; and planning and measurement.

ACTN 993 CPA Exam: Financial Accounting and Reporting (3 credit units)

The Financial Accounting and Reporting section tests knowledge of Generally Accepted Auditing Principles (GAAP) for business enterprises. Topics in this section include financial statements concepts and standards; typical items: recognition, measurement, valuation, and presentation in financial statements in conformity with GAAP; specific types of transactions and events: recognition, measurement, valuation, and presentation in financial statements in conformity with GAAP; accounting and reporting for governmental entities; accounting and reporting for not-for-profit organizations.

ACTN 994 CPA Exam: Regulation (3 credit units)

The Regulation section tests candidates' knowledge of federal tax procedures and accounting issues; of federal taxation of property transactions; of federal taxation – individuals and entities; of professional and legal responsibilities; of ethics and of business law.

BUS 400 Fundamentals of Financial Accounting (3 credit units)

This course covers accounting concepts and terms used to prepare business financial statements: Balance Sheet, Income Statement, and Statement of Cash Flows.

BUS 410 Fundamentals of Managerial Accounting (3 credit units)

This course is an overview of the use of financial accounting information for internal planning and control purposes. It is an introduction to manage strategic and operational choices, to determine pricing and profitability, and to control costs. Topics include cost accounting, budgeting, performance evaluation, and resource allocation.

BUS 411 Managerial Applications of Information Technology (3 credit units)

This course introduces applications of corporate information systems. Topics describe the utilization of the software to solve a wide range of specific business problems and develop strategic decisions, and business management solutions.

BUS 412 Managerial Economics (3 credit units)

This course focuses on the application of economic concepts and principles to the managerial decision-making process. Topics include a review of economic models, the demand and supply analysis, optimization techniques, market structure, and risk evaluation. This course emphasizes the application of microeconomic tools to managerial problems.

BUS 413 Political, Social, and Legal environment of Business (3 credit units)

This course examines the roles and responsibilities of business, key legal concepts, and ethical decision-making processes. In addition, the course presents a critical analysis of theory and regulation of business from political, social and legal perspectives.

BUS 414 Financial Management (3 credit units)

This course introduces basic principles in finance, with a focus on using the financial statements and other financial data to make decisions. Topics include cash flow, the time value of money, capital budgeting, financial risk, working capital management, cost of capital, stock and bond valuation, and the financial regulatory environment.

BUS 415 Operations Management Analysis (3 credit units)

This course introduces the design and management of manufacturing and service operations. Students will learn to improve quality and productivity of products, services, and work-performing processes. Topics include product and service design, capacity planning, supply chain management, theory of constraints, total quality concepts and tools, and just-in-time management and lean operations.

BUS 416 Fundamentals of Marketing Management (3 credit units)

This course provides an overview of the relationships in marketing, business and behavioral activities. Topics include consumer behavior and segmentation, marketing research, environmental factors, competitive

positioning, marketing information systems, distribution, pricing, promotional considerations, and ethical issues.

BUS 417 Management Principles and Organizational Behavior (3 credit units)

This course introduces the principles of management and their application in public and private organization. It helps the students to learn frameworks for resolving problems in organizational settings. Topics include employee motivation, group behavior, leadership, strategic planning, organizational design and problems, and interpersonal communication and influence.

CONS 900 Consilience Theory 1 (3 credit units)

This is the first course comprising the capstone of ITU's general education requirements. It is aimed at presenting the case for the unity of science. It brings together leading edge scientific findings and thinking across a broad spectrum of human knowledge and explores new efforts at integrating the natural with the social sciences. It explores the relationships and linkages among physics, biology, neuroscience, psychology, psychodynamics, mysticism, and philosophy.

Prerequisite: None. Required of all undergraduates

EBUS 910 Executive Leadership (3 credit units)

This course will improve the students interpersonal and team working skills. It will help the students to understand organizational behavior issues, with a special emphasis on assessing leadership competencies and changing corporate cultures. Topics include analyses of leading companies, and direct application of material to individual work settings.

Prerequisite: Graduate standing

EBUS 911 Executive Marketing Strategy and Analysis (3 credit units)

This course focuses on the development and implementation of marketing strategies in the rapidly changing global environment. This course prepares future general managers to deal with core marketing issues by providing a way of thinking strategically about the firm's products, services and markets.

Prerequisite: Graduate standing

EBUS 912 Executive Strategic Management (3 credit units)

This course examines the complex strategic problems facing top management in a variety of contemporary organizations. Topics include strategy formulation, implementation, and evaluation. The course develops the students' ability to analyze and manage business problems from managerial perspectives. It provides concepts to guide strategic decision-making through examining case studies of diverse managerial situations in both large and small organizations.

Prerequisite: Graduate standing

EBUS 913 Managing and Competing in the Global Environment (3 credit units)

The course seeks to provide the students with the skills, and the knowledge required to successfully manage organizations and organizational units within a multinational environment. The primary objective of this course is to help the students think like managers in the global context and enable them to develop an understanding of the strategic issues.

Prerequisite: Graduate standing

EBUS 914 Data Analysis and Decision Models (3 credit units)

This course helps the students to formulate, solve and interpret the mathematical models that assist a manager in decision-making. Decision models that are used in different businesses and industries are emphasized. The course helps the students to make effective operational and strategic decisions using concepts, methods, and quantitative tools.

Prerequisite: Graduate standing

EBUS 915 Current Issues in Executive Compensation & Corporate Governance: Opportunities & Strategies

The course will examine the executive compensation contracts and corporate governance and their impact on executive behavior and firm performance. Topics include equity-based compensation and accounting treatment, strength of governance rating services, market for corporate control, and determinants of senior-executive terminations.

The course will focus on the executive benefits and it is designed to explain how they can effectively manage their benefit programs, especially given today's market situation. Other topics include funding and investment strategies, human capital and compensation issues, multi-country mergers and acquisitions

EBUS 916 Developing Strategies for Competitive Advantage (3 credit units)

This course seeks to expand the students' perspective of competitive strategy and to encourage development and understanding of how firms create and reinforce a competitive advantage. The objective of the course is to provide the students with the conceptual tools associated with the understanding of industry, the assessment of core competencies and the evaluation of key competitors in the formulation and implementation of business strategies.

Prerequisite: Graduate standing

EBUS 917 Leading and Managing Change (3 credit units)

This course offers practical tools to improve the students' ability to influence, to negotiate and to lead changes in the organization.

Prerequisite: Graduate standing.

EBUS 918 Regulation, Governance Ethical and Social Responsibility (3 credit units)

ECON 920 Macroeconomic Theory (3 credit units)

This course analyzes the level and rate of growth of output income, employment and prices, interest, and foreign exchange rates. It prepares decision-makers to understand how an economy functions, how to interpret, analyze, and operate within a changing macroeconomic environment.

Prerequisite: Graduate standing

ECON 921 Microeconomics for Business Decisions (3 credit units)

The course provides an analysis of managerial economics. It focuses on demand, cost, production, and pricing at the individual firm or industry's level. The market structure and the regulatory environment are examined.

Prerequisite: Graduate standing

ECON 923 International Economics (3 credit units)

This course analyzes the source of a country's comparative and competitive advantage in international trade. The course emphasizes the relationship among industrial performance, and trade policy.

Prerequisite: ECON 920 and ECON 921

FINN 916 Securities Analysis (3 credit units)

The course develops analytical skills for personal or business investment activities. Topics covered are techniques for analyzing risk and return for investment opportunities. This course discusses the modern and traditional portfolio management techniques. The students will learn the tools and techniques to develop their skills through the analysis of real firms.

Prerequisite: FINN 933 or equivalent

FINN 917 Financial Economics (3 credit units)

The objective of this course is to undertake a rigorous study of the theoretical foundations of modern financial economics. The course will cover the central themes of modern finance including individual investment decisions under uncertainty, stochastic dominance, mean variance theory, capital market equilibrium and asset valuation, arbitrage pricing theory, option pricing, and incomplete markets, and the potential application of these themes. Upon completion of this course, students should acquire a clear understanding of the major theoretical results concerning individuals' consumption and portfolio decisions under uncertainty and their implications for the valuation of securities.

Prerequisite: FINN 933 or equivalent

FINN 918 Financial Institutions (3 credit units)

This course provides students with an overview of the basic contributions in the modern theory of corporate finance and financial institutions. The

course is methodology oriented in that students are required to master necessary technical tools for each topic. The topics covered may include capital structure, distribution policy, financial intermediation, incomplete financial contracting, initial and seasoned public offerings, market for corporate control, product market corporate finance interactions, corporate reorganization and bankruptcy, financing in imperfect markets, security design under adverse selection and moral hazard, and some selected topics.

Prerequisite: FINN 933 or equivalent

FINN 920 Financial Derivatives and Risk Management (3 credit units)

This course helps the students to develop the necessary skills to value and to use options, and futures. Topics include the valuation of futures contracts on stock indices, on commodities and treasury instruments; the valuation of options; forwards; swaps; hedging strategies. The course covers derivative exchange, valuation of derivatives, trading practices and regulations, assessing and managing financial risk, and mutual funds analysis.

Prerequisite: FINN 933 or equivalent

FINN 930 Investment Management (3 credit units)

The course offers the basics of investment management. Quoted and private equity investments and entrepreneurial finance are the focus of the topics. This course introduces market and portfolio perspectives, starting with the discounted cash flow methods to the concept of term structure in the valuation of risk-free cash flows, including forward rates and valuing risky or uncertain cash flows. The course prepares students to identify various investment products. Both real world and theoretical views are discussed. Prerequisite: FINN 933 or equivalent

FINN 931 International Financial Management (3 credit units)

This course provides students with the framework for making corporate financial decisions in an international environment. Topic include: measurement of currency exposure and of currency risk. In addition, topics about the decision to undertake a global financing program, exchange and capital market; capital budgeting analysis for foreign direct investment; and the value of target firms for cross-border acquisitions are discussed. The course will examine different aspects of the foreign exchange market, the role of governments and the central banks. The main focus is on the markets for spot exchange, currency forwards, options, swaps, international bonds, and international equities. Multinational financial transactions create unique challenges due to the market complexity, to the exchange rate and the political risks.

Prerequisite: FINN 933 or equivalent

FINN 932 Corporate Finance (3 credit units)

Corporate Finance is an introductory finance course and it is required for all MBA students. It is designed to cover the areas of finance that are

important to all managers. At the end of this course you will be able to value the financial position of a firm. In order to reach this goal, the students will analyze historical uses of funds and understand project funding needs. In addition, the students will be able to analyze working capital management; choose among alternative sources of external funding for company operations; and evaluate investment opportunities. The course shows the students how to use ratio analysis to assess corporate performance, financial statements and cash needs.

Prerequisite: Graduate standing

FINN 933 Managerial Finance (3 credit units)

The course teaches the students financial concepts and tools necessary for effective business planning. Topics include formation of interest rates, income taxes, working capital management, cost of capital, financial forecasting, external sources of capital, company valuation and bankruptcy.

Prerequisite: Graduate standing

FINN 934 Financial analysis and Corporate Policy (3 credit units)

The course is an in-depth study of selected topics in finance, including ratio analyses, capital structure and leverage, working capital management, reorganization and bankruptcy. Current business cases, including several Harvard Business School cases study, will be discussed.

Prerequisite: FINN 933 or equivalent

FINN 935 Mergers and Acquisitions (3 credit units)

This course examines issues that arise in the merger and acquisition context. There will be an analysis of the key components of acquisition agreements against the background of relevant case law. Topics include advanced capital budgeting techniques, strategies, acquisitions, and leveraged buyouts. The course focuses on the study of the law governing, and the methods of accomplishing, including the conduct of negotiations, considerations in pricing and stock-for-stock swaps.

Prerequisite: FINN 933 or equivalent

FINN 936 Behavioral Finance (3 credit units)

There is an abundance of evidence suggesting that the standard economic paradigm – rational agents in an efficient market – does not adequately describe behavior in financial markets. In this course, we will survey the evidence and use psychology to guide alternative theories of financial markets with an eye towards identifying frontiers and opportunities for new research. Along the way, we will address the standard argument that arbitrage will eliminate any distortions caused by irrational investors. Further, we will examine more closely the preferences and trading decisions of individual investors. We will argue that their systematic biases can aggregate into observed market inefficiencies. The second half of the course extends the analysis to corporate decision-making. We present the two themes of behavioral corporate finance: rational managers

exploiting financial market inefficiencies and managerial decision-making biases. We then explore the evidence for both views in the context of capital structure, investment, dividend, and merger decisions. We emphasize the importance of differentiating the behavioral approach from information models and other more traditional methodology.

Prerequisite: FINN 933 or equivalent

GRN 500 English and Grammar (3 credit units)

This course is an English language, grammar-based program for second language instruction. The goal is English language growth. Frequent interaction and communication activities are the foundation for the course, starting with grammar information linked to practice modes. Class attendance and participation will allow students to apply learning in the context of their own life experiences. Weekly practice quizzes, in-class oral and written communication will be required. Group activities in class will also provide variety in learning opportunities.

Prerequisite: None

GRN 511 Verbal Communications and Conversations (3 credit units)

This course focuses on the development of verbal language skills. It includes conversations in small groups. Topics are relevant to the needs and experiences of students learning to use verbal English in the American culture.

Prerequisite: GRN 500

GRN 513 Newspaper Reading and Essay Writing (3 credit units)

This course increases student's proficiency in the use of the newspaper. Emphasis is given to articles and sections useful in becoming acclimated to the procedures and systems of a new culture. It includes writing practice on topics relevant to engineering.

Prerequisite: GRN 500

GRN 514 Active Listening (3 credit units)

The course focuses on the development of listening as a method for learning English. Format will include listening to cassette tapes. Students will respond by paraphrasing, developing questions and replying.

Prerequisite: GRN 500

GRN 515 Technical Writing and Public Speaking (3 credit units)

This course is an introduction to formal technical reports and oral communication designed especially for students planning careers in the sciences or engineering. By asking students to research and present topics to the class, the course provides the student with a thorough grounding in the writing and speaking skills required in the workplace. A particular emphasis is placed on effective professional communications to allow students to begin and excel in their careers.

Prerequisite: GRN 500

GRN 597 Joint Seminar / Curricular Practical Training (CPT) (3 credit units)

Invited seminar speakers on subjects of general interest.

Prerequisite: None

Curricular practical training

The curricular practical training is defined to be alternative work and study, internship, cooperative education, or any other type of internship or practicum that is offered by sponsoring employers. *Prerequisite: None*

GRN 599 Writing and Composition (3 credit units)

This course provides students with a thorough grounding in writing and composing in English with particular emphasis on effective professional communications at management, marketing, administrative, and research levels. The student gains knowledge and experience in choosing and composing various types of real-world business correspondence.

Although the class will be focused on composition, students will be expected to participate in spoken as well as written forms of communication. *Prerequisite: GRN 500*

GRN 920 Internship (3 credit units)

Conduct research and development at a sponsoring company on a project in the student's field for one trimester. Students must spend at least 80 contact hours for each credit hour received. At the end of the internship, the student must submit a satisfactory technical report to the advisor, and receives three credit units. This course does not count toward core degree requirements, unless specifically granted on an individual case-by-case basis by the Academic Committee.

Prerequisite: None

GRN 921 Independent Study I (3 credit units)

At the end of the Independent Study I, the student must submit a satisfactory report to the advisor, and receives three credit units.

GRN 922 Independent Study II (3 credit units)

At the end of the Independent Study II, the student must submit a satisfactory report to the advisor, and receives three credit units.

GRN 923 Independent Study III (3 credit units)

At the end of the Independent Study III, the student must submit a satisfactory report to the advisor, and receives three credit units.

HRMG 940 Human Resource Management (3 credit units)

This course examines the principles of human resource management, including recruiting, hiring, orienting, training, developing, disciplining, and rewarding employees. The course provides a management-oriented exploration of human resource management, structure, functional applications, and labor management relations. This course is a humanistic

and legal analysis of organizations, focusing on the role of human resource management. There will be an examination of managers and leaders within organizations and their responsibility to maximize performance and make decisions based on ethical criteria.

Prerequisite: Graduate standing

HRMG 941 Employee Training and Development (3 credit units)

This course reviews training, employee and organizational development techniques that the organizations use to build group and individual skills. Topics include linking identified needs to business objectives, developing an implementation plan, implementing the plan using a variety of modalities, and assessing results. The students will use a hands-on approach to evaluate organizational needs for employee development.

Prerequisite: HRMG 940 or equivalent

HRMG 942 Employment law for business (3 credit units)

This course emphasizes federal employment statutes. Cases are used to illustrate the various federal courts' interpretation. Federal agencies such as Equal Employment Commission and Department of Labor are studied. Topic on the employment Law provides a comprehensive analysis of federal and state laws, which affect the human resource function, including equal employment opportunity, wage and overtime payment, and employment agreements. The course focuses on applying employment laws to develop programs that enable organizations to act positively in meeting both company and work force needs, trying to resolve workplace disputes, prevent litigation, and implement personnel policies and practices in conformity with applicable law.

Prerequisite: HRMG 940 or equivalent

HRMG 943 Human Resource Planning (3 credit units)

This course helps the students to understand the necessary basics of the human resources planning process in organizations. In this course, the students should complete a comprehensive written plan for a company's human resource function. Review of concepts and skills developed in other human resource courses is required. In addition to preparing the written plan, the students should make an oral presentation to the class and, if possible, to a panel of human resource professionals. Quantitative, qualitative concepts, approaches and techniques are discussed. Topics include human resources data systems and human resource action plans.

Prerequisite: HRMG 940 or equivalent

HRMG 944 Managing Human Capital (3 credit units)

This course focuses on the organizational factors that influence the utilization of human capital. In addition, it will focus on developing, maintaining and improving workforce competence. This course will also explore the challenges of increasing the competitive advantage through effective human capital management. Topics include workforce planning

in a dynamic environment; building a positive human capital reputation; dynamics of organizational culture; organizational change and learning; linking corporate strategy and human capital management, and influencing emerging technologies.

Prerequisite: HRMG 940 or equivalent

HRMG 945 Strategic compensation: issues and opportunities (3 credit units)

This class addresses the need for strategically focused compensation systems aligned to the business objectives and examines the related factors that impact employee motivation and productivity in a variety of settings and industry sectors. The course will examine and analyze the various components of compensation systems in contemporary organizations in understanding how and why they add and sustain shareholder and/or stakeholder value.

Prerequisite: HRMG 940 or equivalent

HRMG 946 Human Resources and Technology (3 credit units)

This course offers the students the best practices in use of technology in the human resources field. Topics include the use of human resources information systems, web-based human resources used to develop and support the various functional areas of human resources.

Prerequisite: HRMG 940 or equivalent

HRMG 948 Managing Global Diversity (3 credit units)

This course discusses the benefits and challenges of managing diversity in the workplace. The students will analyze various ways to develop a positive, nondiscriminatory and productive work environment. In addition, the course focuses on workplace issues related to differences in gender, race, cultural ethnicity, age, and social class.

Prerequisite: HRMG 940 or equivalent

INBS 910 Fundamentals of International Business (3 credit units)

This course discusses the world of international business, which raises issues related to controlling and staffing enterprises that are located in a distant area from a business' primary location. Topics include economic, cultural, legal, and political environments of international trade, international institutions and agencies. In addition, the topics include problems of foreign investments, conflicts between host countries and multinational corporations, and effects of multinational corporations on the global economy.

Prerequisite: Graduate standing

INBS 911 International Financial Markets (3 credit units)

This course analyses the international financial markets. Topics include foreign currency, international money markets, banking, and capital markets.

Prerequisite: INBS 910, FINN 933 or equivalent

INBS 912 International Law (3 credit units)

This course explores the legal considerations that apply to U.S. businesses abroad and explores issues of contract negotiations, international conventions, and current multinational business issues such as dumping, products liability, patents and copyrights. Topics about sovereignty, legitimate war, humanitarian intervention, economic aid, and human rights are discussed. The course explores international law concepts and issues such as, the law of treaties. It will discuss a series of international law topics and issues, including the settlement of international disputes, and the law or armed conflict.

Prerequisite: INBS 910 or equivalent

INBS 913 Global Strategic Management (3 credit units)

This course examines the fact of Globalization, and how managers in multinational firms struggle with a complex and rapidly changing international economic environment. The course introduces the business skills of understanding and managing strategic issues in international environment. It will also focus the understanding of the need for awareness of a change in organizations' internal and external environments.

Prerequisite: INBS 910 or equivalent

INBS 914 International Monetary Economics (3 credit units)

The course offers an analysis of the balance of payments and foreign currency markets. Topics include the international payments system, foreign investment and debt.

Prerequisite: INBS 910, ECON 923 or equivalent

INBS 915 International Human Resource Management (3 credit units)

The course focuses on the role of the manager in international organizations. It creates awareness of differing legal environments. Topics related to functional areas of human resource management - staffing, compensation, training, and labor relations are discussed.

Prerequisite: INBS 910, HRMG 940 or equivalent

INBS 921 International Business Practicum (3 credit units)

This course is a capstone course that focuses on integrating theory and practice through the application of international business tools and methods. The course will feature guest speakers that are experts in various aspects of international trade.

Prerequisite: INBS 910 or equivalent

MBAN 996 Case and Independent Study (3 credit units)

By arrangement with instructor. Independent study of topics of special interest in business administration under the direction of an instructor, who is knowledgeable in the field. It may consist of reading, homework, tests, presentation and project determined by the instructor.

Prerequisite: Graduate standing

MBAN 997 Research Methods (3 credit units)

This course provides an introduction to some of the important topics in the general area of research methods, and to do so in a non-intimidating and informative way. Topics include the role and importance of research, problem selection, sampling, measurement, data collection, descriptive and inferential statistics, experimental and nonexperimental research, quasi-experimental research, and writing and presenting research. The course of study will give the student a solid background of knowledge for developing a research paper and subsequently, submitting it for publication to a refereed journal.

Prerequisite: Graduate standing

MBAN 998 MBA Project (3 credit units)

By arrangement with project advisor. A nominal number of 2 or 4 credit units is expected toward to M.S. degree if the Project Option is selected. Conduct independent research of an approved topic in business administration, prepare a technical report, and defend it before a faculty advisor.

Prerequisite: Graduate standing

MBAN 999 MBA Thesis (3 credit units)

Preparation of an independent research or thesis and defending it before a committee composed of a number of faculty designated by director of the M.B.A. program.

Prerequisite: Graduate standing

MGTN 901 Fundamentals of Management (3 credit units)

This course focuses on both theory and application. It is a broad overview of the field of professional management designed for the beginning upper division or graduate student or interested non-management major. It covers the functions of a manager, managerial ethics and social responsibility, managing in a global environment, motivation, controlling, leadership, organization design, strategy, and operations.

Prerequisite: Graduate standing

MGTN 922 Quality Control Management (3 credit units)

This course focuses on the understanding of the effective quality management. It also provides a basis approach to teamwork, to analysis of continuous improvement and quality control. The responsibility of the leaders, including managers is emphasized. The course discusses the methods of quality control and improvement. The key factors of the course are defining quality, and developing systems for monitoring and improving quality control.

Prerequisite: MGTN 901 or equivalent

MGTN 930 Strategic Operations Management (3 credit units)

This course is designed to give both a theoretical and practical background in strategic management. Strategic operations management concerns the essential activities of directing the varied processes of both manufacturing and service enterprises in both the domestic and Global environments. The course will analyze case studies related to the real challenges of management. It will develop awareness in business matters significant to fast moving high tech entrepreneurial environment. In addition, it will cover the strategic aspects of operations management.

Prerequisite: MGTN 901 or equivalent

MGTN 941 Entrepreneurship and Venture Capital (3 credit units)

The course discusses the entrepreneurship and emphases are on forming and operating new business ventures. It covers important aspects of looking for new business opportunities. This course teaches the students how to pursue entrepreneurial opportunity related to starting a new venture. It will also focus on the development of entrepreneurial opportunities and determine the feasibility of such opportunities in today's business environment.

Prerequisite: The course should be taken concurrently with MGTN 945

MGTN 942 Project risk management (3 credit units)

This course explores various ways to identify, and analyze the full range of project risks. It will also explore the six risk management: risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control. The students will use case studies to learn risk management techniques.

Prerequisite: MGTN 901 or equivalent

MGTN 943 High-Technology Entrepreneurship (3 credit units)

This course is offered for those planning to undertake an entrepreneurial career in starting and building an international company in the high-technology area. A special effort is made to take advantage of ITU's proximity to the entrepreneurial community in Silicon Valley with its fundamental international business thrust. An integrative business plan for a new company in the technology arena is an integral part of the course.

Prerequisite: Graduate standing

MGTN 944 International Management (3 credit units)

This course studies the role of managers in global markets. Topics include the external economic and political environment, international strategic planning, partnerships, global human resource management, managing technology, product and service design, ethics and leadership. The course utilizes innovative techniques and case study analysis from a variety of national, and multinational firms.

Prerequisite: MGTN 901 or equivalent

MGTN 945 Pitching a Business to Venture Capitalists (or any investor) (1 credit units)

In today's extremely competitive world of raising money for startup companies, it is absolutely critical to have an effective and well-conceived pitch deck to compliment your vision and strategy. Only 1 of every 200 business plans submitted to venture capitalists (VCs) gets funded, so it is vital to present a well thought-out presentation that includes all of the elements that VCs (or any type of potential investor) will be looking for in deciding whether to invest in your company or not.

Whether you are interested in starting your own company someday, want to work for a startup, or just want to learn more about venture capital, Silicon Valley and startups in general, this will be a great opportunity to discover how startup companies have successfully raised money – and how you can too!

There are two different ways to get involved, depending on your level of interest:

How to Pitch a Business to Venture Capitalists (or any investor) – Joint Session lecture/panel

This class will be an option for students wanting to take a 1-unit Joint Session class and is comprised of attendance of two lectures:

1) How to Build a Pitch Deck for VCs

Students will get a brief history of venture capital and then learn what today's VCs are looking for in a corporate presentation. This includes company mission, business case, competitive landscape, financials, marketing plan, product, etc. Even if you are not pitching to a venture capitalist, you will learn the necessary elements to pitch to bankers, angels, and other financiers.

2) Pitch Day Panel

Students will attend the presentation of pitch decks that participants of MGMT945W will make to a panel of ITU professors. Each student in the audience will vote along with the ITU panel for the top teams based on the quality of their presentation.

Prerequisite: Graduate standing

You do not have to join a team (MGTN945W) to attend these lectures

MGTN 945W: Building a Pitch Deck for Venture Capitalists (or any investor) – (2 credit units) Workshop

Participants will form teams (companies) of 2-4 people to take on the roles of a real life startup company (eg. CEO, CTO, VP Sales, VP Marketing, etc.) During the course of the trimester these teams will work diligently to create a pitch deck (of a real or fictitious company) that includes all the elements outlined in MGTN945. Up to 10 of these teams will present their pitch decks to a voting panel of ITU professors and fellow students and also get feedback on their concepts and presentations. The winning

team(s) will then get the opportunity to take their pitch to a Silicon Valley venture capitalist!

This workshop is designed for current or future entrepreneurs or those who want to better understand what it takes to fund and/or work at a startup company.

Prerequisite: Graduate standing and attendance of MGTN945

MGTN 946 Culture and Management in Asia (3 credit units)

The course examines the complex issues of interdependence among "culture" management philosophies, and corporate strategies in the Pacific Asian region. It provides conceptual tools to understand the dynamics of the interdependence, and contributes to developing skills in managing particularly joint ventures within local Asian environments.

Prerequisite: Graduate standing

MGTN 947 High Performance Leadership (3 credit units)

What does it take to build a high-performance unit? The focus of the course is on individuals who are in the leadership positions, particularly the middle and upper-middle management in contemporary complex organizations. The course shows that traditional methods of management may produce adequate levels of performance but prevent excellence from developing. More recent or new approaches to leadership will be discussed and lead to a high-performing system.

Prerequisite: MGTN 901 or equivalent

MGTN 948 Project Management (3 credit units)

This course provides an overview of project management history, culture, methodologies, leadership and strategic planning. The course introduces important tools, such as work breakdown structure, scheduling, earned value analysis, and risk management. Case studies from a variety of organizational settings are discussed. The course discusses the 5 processes that must be done for project success: Define, Organize, Execute, Control and Close. The strategic implications of projects will be considered with respect to the organizational vision.

Prerequisite: MGTN 901 or equivalent

MGTN 949 Organizational Theory (3 credit units)

The course examines the role of perception, learning, motivation, leadership, organizational culture, communication, group and team dynamics, conflict, stress, and other factors that affect individual job performance and overall organizational performance. In addition, the course describes the relationship between the dual motive theory and the human behavior. Emphasis is placed on underlying causes of human behavior in organizations, and how to effectively manage behavior. Case studies are used to enhance learning and integration of key management skills related to managing human behavior at work

Prerequisite: MGTN 901 or equivalent

MGTN 951 Business Communications (3 credit units)

Communication is an essential component in every management task. One objective of this course is to provide a framework to approach communication challenges and make media, message, structure, and style choices. Another objective is to develop the oral and written communication skills required of managerial leaders. Barriers to communication, particularly cultural barriers will be analyzed.

Prerequisite: GRN 500

MGTN 952 Business Ethics (3 credit units)

This course introduces ethical decision-making in business environment. It examines the individual, organizational, and macro level issues. The course does not attempt to determine correct ethical action. In the complex business environment in which managers confront ethical decision-making there is no absolute right or wrong answer in most cases. Since there is no general agreement on the correct ethical business norms, critical thinking and relevant decision-making are examined.

Prerequisite: Graduate standing

MGTN 953 Business Law (3 credit units)

This class is intended to inform and educate graduate business students of the legal requirements and risks associated with managing, owning and operating a high tech business in today's global economy.

Prerequisite: Graduate standing

MGTN 954 Advanced Project Management (3 credit units)

This course offers a study of the human and the operational sides of project management. The human side includes discussion on negotiating and conflict management, leveraging diversity and selling project management. The operational side includes scope control techniques, risk management, and organizing for success. The students will learn how to effectively engage the project team, deal with the inevitable conflicts and use intellectual and cultural diversity to encourage creative problem solving. *Prerequisite: MGTN 948*

MISY 910 Business Database Applications (3 credit units)

This course provides a basic overview of the concepts, principles, skills and techniques of business database systems and of database application system development. The course provides an approach to the design and use of databases for business applications. The study focuses on query languages and application generation. Use of database software applications are a necessity in current business environments.

Prerequisite: MISY 915 or equivalent

MISY 911 Business Telecommunications (3 credit units)

The course offers an overview of communications technology used in many business applications - local area network, wide area network, broadband network, wireless and voice network. The course helps the students understand the role of internet protocols. In addition, it provides training to analyze network requirements, design and implement local area networks.

Prerequisite: MISY 915 or equivalent

MISY 912 Information Resource Management (3 credit units)

This course explains the concept of viewing information systems resources from a strategic resource standpoint. The course will provide pragmatic tools for implementing the IRM within the organization. Topics will include Information System outsourcing, total cost of ownership, Information System planning and strategic analysis, management of IT human resources, traditional project management theory, and project management techniques.

Prerequisite: MISY 915 or equivalent

MISY 913 Managing Global Information Systems Projects (3 credit units)

The course helps the students learn how to plan and manage global information systems projects by focusing on initiating, planning, executing, controlling and closing projects. Topics such as integration, scope, timing, cost, quality, human resource, technology, communications, risk and procurement are discussed. The students will learn how to monitor project plans and communicate reports to clients.

Prerequisite: MISY 915 or equivalent

MISY 914 Information Systems Innovation (3 credit units)

This course provides the tools and the skills to leverage emerging information technologies in order to create new business opportunities for both new entrepreneurial ventures and traditional firms. The course helps the students to understand, evaluate, and apply difficult topics such as new innovative and entrepreneurial information technologies.

Prerequisite: MISY 915 or equivalent

MISY 915 Management Information Systems (3 credit units)

This course explains the concept of managing information systems as a part of a broader socio-technical system and their impacts on people and processes in the business environment. Critical thinking is an important and essential part for the understanding of important issues associated with the management aspects of information systems. The course focuses on how the organization has used and can use its information resources to best serve its needs.

Prerequisite: Graduate standing

MISY 920 Software Development Process Management (3 credit units)

This course helps the students to understand the software development process at both the project and organization levels. In addition, it provides the students the tools to analyze software cost and schedule transaction issues. And it teaches them how to apply the principles and techniques to practical situations. Topics include statistical decision theory, software risk management.

Prerequisite: MISY 915 or equivalent

MISY 925 Public Information Management (3 credit units)

The course presents an introduction to computers and information management systems in public sector organizations. Topics include data management, data analysis, public systems analysis, algorithm development, data base design concepts, and design support systems. The course focuses on the study of database and network technologies; the influence and relevance of information systems in public agencies; and the review of issues of ethics, and security as related to Information Systems.

Prerequisite: MISY 915 or equivalent

MISY 926 Strategic Management of Information Technology (3 credit units)

This course addresses some contemporary issues faced by general managers – e.g., globalization, and time compression. The course defines the information technology strategies of an organization. It will examine principles and concepts of strategic information technology systems, and systems development as it relates to information technology management strategy.

Prerequisite: MISY 915 or equivalent

MISY 930 Business Information Systems & Technologies (3 credit units)

This course provides the fundamentals of information systems and technology in business. The focuses are on the integration of business functions, and the strategic information systems. Topics include project planning, time, risk, and resource management in many business applications. In addition, the course will introduce information systems building and prototyping.

Prerequisite: MISY 915 or equivalent

MKTN 950 Entrepreneurial Marketing (3 credit units)

This course provides entrepreneurs with an understanding of marketing for new and small enterprises. It addresses marketing strategies. The Students will apply marketing concepts, such as creating and nurturing relationships with new customers, suppliers, distributors, employees and investors. This course brings together theory and practice to develop a comprehensive entrepreneurial business-marketing plan.

Prerequisite: Graduate standing

MKTN 951 Competitive Marketing Strategies (3 credit units)

The course offers strategy development by discussing important analysis of various cases from consumer, supplier, and technological markets; production and service businesses for-profit and nonprofit sectors. The students will learn how to build a marketing plan.

Prerequisite: Graduate standing

MKTN 952 Retailing and Supply Chain Management (3 credit units)

The course offers a critical analysis of retailing strategies and e-business sites to expand the company's markets, to provide service customers, and to increase the sales. The course also discusses the critical supply chain issues involved in commerce including inventory management, transportation, procurement and warehousing.

Prerequisite: Graduate standing

MKTN 953 International Marketing (3 credit units)

The course presents to the students the major factors of the international marketing decisions. The student will learn about the forces that influence the global marketing environment. The course introduces students to principles, policies, procedures, ethics, and techniques used in efficient and effective international market. International product, price, promotion, and distribution issues are discussed.

Prerequisite: Graduate standing

MKTN 954 Marketing Research (3 credit units)

This course introduces the methods for collecting, analyzing, and interpreting data relevant to the marketing decision-making. The course focuses on structuring marketing problems, understanding the different sources of marketing research data, using particular techniques for analyzing marketing research data that helps to make better marketing management decisions.

Prerequisite: Graduate standing

MKTN 955 Strategic Application of Technology in Marketing (3 credit units)

This course introduces technology efficiencies into the value chain that become critical to corporate strategy. The course will review the applications of the current and emerging technologies to the strategic creation, maintenance, and communication of value within the corporate value chain. In addition, it will provide the students with an overview of strategic technology process and its principal concepts. Students are encouraged to present actual marketing issues, to bring the ideas from Silicon Valley companies for discussion.

Prerequisite: Graduate standing

MKTN 957 Consumer Behavior (3 credit units)

The course focuses on how to assess customer behavior and interprets this knowledge into marketing strategies. Topics include customer satisfaction and dissatisfaction; the role of quality, TQM, cycle time. In

addition, the course introduces concepts such as, motivation, perception, knowledge, attitude, and culture on customer decision-making. The course is designed for students interested in consumer, service, high-tech, or not-for-profit marketing.

Prerequisite: Graduate standing

MKTN 958 Marketing Management (3 credit units)

This course presents an approach to understand and manage the marketing function. The students will learn how to develop a written marketing plan to determine and integrate elements of a marketing strategy. Topics include market segmentation, positioning and research; product decisions; pricing; channels of distribution; advertising; promotion; new product development; and marketing budgets. The course will introduce the role of marketing in the U.S. economy and the interaction of marketing with specific business functions and with society.

Prerequisite: Graduate standing

MKTN 959 Advanced Marketing (3 credit units)

The course will explain the importance of marketing, which include market research, competitor analysis and the consumer analysis. The student will explore the marketing process, and concept. In addition, the course will provide a study of the relationship between the marketing mix, and the changing business environment.

Prerequisite: Graduate standing

MKTN 960 Effective Marketing Planning In Dynamic Environments (3 credit units)

This course will develop the implementation, control and evaluation plans. It addresses the practical aspects of appraisal, prediction and monitoring of market factors that impact organizational performance. The course will explain how marketing decisions contribute to developing and maintaining competitive advantage in dynamic markets.

Prerequisites: Graduate standing

MKTN 961 E-commerce (3 credit units)

This course provides introduction to e-Commerce and related subjects. The course will cover e-commerce infrastructure and its related technologies. Various business models used in e-commerce will be discussed in the lecture. The student will have knowledge of e-commerce when finishes this course.

Prerequisite: Graduate standing

MKTN 965 Vendor/Seller Management (3 credit units)

This course will explain all aspects of outsourcing, including planning, finding the right vendor and negotiating effectively. Topics include relationship building, creating a culture of cooperation, and skills in dealing with vendor. The course will teach the buying and selling processes that corporations use in business-to-business transactions. The

focus of the course is on the concept of selling, improving value, and meeting the needs of clients through effective questioning, analysis, sales planning and presentations. The students will learn the major phases of the sales process, the sales objectives for each phase, the client needs, and the solutions' presentation.

Prerequisite: Graduate standing

7. Facilities

Library Resources

ITU has sought to increase the research, vast reference support and library resources made available to ITU students, particularly our masters students who need the most up to date research data, most commonly found in expensive subscription-based computer databases. In August 2005, ITU donated its 11,000 volume library to the Martin Luther King, Jr. Library and now direct ITU students to this wonderful resource.

All ITU students now have FULL ACCESS to the resources of Martin Luther King, Jr. Library, the main library of and located at San Jose State University, at 150 E. San Fernando (at Fourth Street), San Jose, CA. The library is a 2-minute drive from ITU.

All ITU students access privileges include: obtaining a library card; checking out books, CD's, DVD's and other materials; utilizing the full multimillion dollar subscription-based university computer databases on campus; complete support from the university librarian; telephone reference support during library hours; support for multi-lingual students (including students who speaking Mandarin, Cantonese, Korean or Japanese); and full wireless access with their laptops within the library, and/or DSL direct connection services for those without a wireless card to store legally downloadable research data obtained from the library.

In addition to all the available volumes of hard cover books and publications at the library, students have access to the latest in the following databases.

For ITU graduate students, at no extra charge, the following paid subscription-based database access include the following:

ABI/INFORM Global - Indexing and full text for standard magazines and scholarly journals in business and economics.

America's Newspapers: California - Full text of many California newspapers, including the San Jose Mercury News, Los Angeles Times, Sacramento Bee, and the San Francisco Chronicle.

Association for Computing Machinery - The world's largest educational and scientific computing society, delivers resources that advance computing as a science and a profession. ACM provides the computing field's premier Digital Library and serves its members and the computing profession with leading-edge publications, conferences, and career resources.

Business & Company Resource Center - (formerly Gale Business Resources) Data on companies and industry groups. Company profiles include selected brand listings, company histories, and SEC reports.

Industry information includes an overview and analysis of the industry with market share, company rankings, financial ratios and other statistical information.

Business Full Text - Indexes and abstracts articles from leading business magazines and trade and research journals in English, published in the USA and elsewhere. Since 1995 it includes the full text of selected periodicals. The abstracts (summaries) range from 50 to 150 words and describe the content and scope of the source articles.

Business Source Premier - Full text for newspapers, books, scholarly journals, standard business periodicals and country economic reports. Over 200 of the journals have PDF full text back to 1965 or to the first issue published. Can search by ticker symbol, NAICS/Industry code, or Duns number.

CCH Internet Tax Research Network - Tax research materials, replacing the Standard Federal Tax Reporter in paper and CD-ROM. U.S. and California tax codes, regulations, rulings, procedures, decisions and other developments in the field of taxation.

Communication Abstracts - Indexes and abstracts journal articles, reports, and books in general communication, mass communication, broadcasting, speech, advertising, public relations, journalism, radio and television, etc. It provides worldwide coverage from 1977 forward. The print equivalent is *Communication Abstracts*.

CQ Researcher - This weekly publication gives background information on current and controversial issues. Includes pro and con arguments, bibliography, contacts, chronology and future outlook.

Dun & Bradstreet Million Dollar Database - A directory of U.S. companies, including location, contact information, total sales, number of employees, brief executive biographies and other data.

EconLit - Access to the American Economic Association databases, *Index of Economic Articles* and *Journal of Economic Literature*. It also indexes journal articles and book reviews from 260 economics journals and about 200 monographs each year.

Economic Census - The Economic Census profiles the U.S. economy every 5 years, from the national to the local level. Statistical tables in HTML (web page) and PDF formats. Includes reports for individual states, zip code and by broad market sectors.

ERIC via CSA - Citations to journal articles and documents covering education at all levels, child development, educational psychology and librarianship (1966 - present).

Factiva - General news and company, industry, and other business information (mostly full-text) from newspapers, newswires, magazines, trade journals in 22 languages from 118 countries. A joint project of Dow-Jones & Reuters, it includes color pictures from Reuters and Knight-Ridder publications, company reports, SEC filings, web contents, and transcripts from BBC, ABC, CBS, NBC, Fox, CNN, NPR and more.

Financial Accounting Research System (FARS) - FARS is the source for primary accounting research. FASB-OP gives the full text of all AICPA and FASB pronouncements. FASB-CT covers general and industry standards relating to accounting. EITF gives the full text of abstracts for every issue discussed by the Emerging Issues Task Force. FASB-Q&A gives special reports on individual FAS. FASINDEX provides a topical index for these databases.

GPO on Silverplatter - Index to publications of U. S. Government agencies, including works such as monographs, serials, maps and some audiovisuals.

Hoover's Company Profiles - 2,500 in-depth company profiles including operations, officers, strategies, competitors, histories, locations, products & brand names, and financial information.

Lexis/Nexis Academic - Complete text of newspapers, magazines, newswires, transcripts of TV and radio news, trade publications, laws and court cases. "Foreign Language News" section includes articles in Spanish, French, Dutch, Italian & German. Company information includes annual reports (NAARS), SEC Reports, and Hoover profiles.

Rand California - Database on California, its cities and counties--economy, crime, school test scores, statistics; online index of public policy and research publications; calendar of workshops, seminars, and other discussions; federal policy bulletins ; bulletin on state policy developments; monthly reports on the California economy.

RDS Business Reference Suite - This database provides balanced and highly-focused full-text coverage of company and industry news, management practices, and market research information. It's essentially a core business reference collection featuring more than 1,400 leading worldwide business sources, plus tens of thousands of tables containing strategic data.

Regional Business News - Business news from local English-language business journals, newspapers and newswires covering many metropolitan and rural areas within the United States.

Standard & Poor's Publications - Electronic versions of *Industry Surveys* (which covers trends, outlook and comparative company statistics for specific industries); *Stock Guide* and *Bond Guide* (with prices and other trading information) and *Stock Reports* (which reports on financial and trading activities of important companies).

StatUSA - Reports and statistics on export and international trade (*National Trade Data Bank, Survey of Current Business*), domestic economic news (retail sales, CPI), business leads (*Commerce Business Daily*), and other economic information (*Economic Report of the President*). Data are gathered from 50 federal agencies.

Value Line Investment Survey Online - Standard Edition - A software program to help investors analyze and select stocks. A broad range of functions can be performed (e.g. sorting, filtering, graphing and reporting) on individual or groups of stocks. Each stock is described by over 200 categories of data.

Zacks.com - Research on 6,000+ publicly traded companies compiled from over 2,500 analysts at more than 240 different brokerage houses. Relevant to all disciplines of business (i.e. Finance, Accounting, Management, and Marketing). Includes company and stock news and information (and some mutual funds), analysis, rankings, investment advice.

For ITU MSCE, MSEE, MSSE students, at no extra charge, the following paid subscription-based database access include the following:

Academic Search Premier Full text for more than 4,650 publications, including more than 3,600 peer-reviewed journals. PDF backfiles to 1975 are available for over 100 journals. Designed specifically for academic institutions, it's the world's largest multi-disciplinary database. The majority of full text titles are available as searchable PDFs, and some are scanned in color. This scholarly collection offers information in nearly every area of academic study including: computer sciences, engineering, physics, chemistry, language and linguistics, arts & literature, medical sciences, ethnic studies, and many more

Engineering Village 2 Covers engineering, patents, technology, applied sciences.

ENGnetBASE Electronic full text of over 100 engineering handbooks published by CRC Press. They are searchable by topic or keyword. The collection is also browsable by category (for example, Nanoscience/Nanotechnology, Chemical Engineering, Material Science, Mechanical Engineering, etc.). New handbooks are continuously added to ENGnetBASE.

IC Master IC Master is a database of currently available integrated circuits. Using this resource you can review the latest IC product information; identify manufacturers and second sources; locate manufacturers and distributors.

IEEE Xplore Covers electrical, electronic and computer engineering.

INSPEC Ondisc Physics, electrical and electronic engineering, computer engineering, materials engineering, manufacturing and control engineering, communications and information technology.

NIST Scientific and Technical Databases NIST Data Gateway-provides easy access to many (currently over 80) of the NIST scientific and technical databases. These databases cover a broad range of substances and properties from many different scientific disciplines. The Gateway includes links to free online NIST data systems as well as to information on NIST PC databases available for purchase.

ScienceDirect Full-text articles, primarily science, technology and medicine (STM). Covers a few journals in the arts, humanities and social sciences; also includes some reference e-books.

Wiley Interscience Covers sciences, business, law and education.

For ITU Bio Management and Pharmaceutical Science students, at no extra charge, the following paid subscription based database include the following:

Age line - Aging and middle age, from the perspectives of psychology, economics, sociology, gerontology, public policy, business, health and healthcare services, and consumer issues. References to documents on healthcare and policy comprise about half of the ... more details.

Biodiversity Heritage Library Full Text - The BHL will provide basic, important content for immediate research and for multiple bioinformatics initiatives. For the first time in history, the core of our natural history and herbaria library collection.

Biological Abstracts - Indexes original research (primary) articles in biological and biomedical journals. Includes traditional areas of biology such as botany, zoology, and microbiology, as well as related fields such as biomedicine, agriculture, pharmacology and ecology

Bio One Full Text - Full text of over 110 scholarly, peer-reviewed bioscience journals from approximately 50 scholarly publishers.

CHEM net Base Full Text - Online versions of major chemical reference works: The Combined Chemical Dictionary; Handbook of Chemistry and Physics; Polymers - A Property Database; Dictionary of Commonly Cited Compounds; Properties of Organic Compounds.

CINAHL Plus with Full Text - Indexes the literature of nursing,

occupational therapy and other health professions. Virtually all English-language publications are indexed along with the publications of the American Nurses Association and the National League for Nursing.

Encyclopedia of Life Sciences Full Text - Over 3,000 specially commissioned and peer-reviewed full text articles, written by 5,000 scientists. Covers biological sciences, medicine, science, ecology, genetics.

General Science Full Text Full Text - Basic professional journals and popular science magazines in all sciences. Full text begins in January 1995; indexing/abstracting goes back to 1993.

ICPSR - See Inter-University Consortium for Political and Social Research (ICPSR) Full Text Maintains and provides access to a vast archive of social science data for research and instruction, such as population, economics, education, health, social and political behavior, social and political attitudes, history, crime, aging, and substance ...

Ingenta - is a platform offering full text access to approximately 200 scholarly and academic journals in a variety of subjects. Additionally, the collection of citation data includes some 20 million articles from 30,000 publications.

Medline - Citations and abstracts from biomedical journals published in the U.S. and 70 other countries, dating back to the mid-1960's. Most records are from English-language sources or have English abstracts. Also called Plumbed.

Merck Manual Home Edition Full Text - Vital information about diseases, diagnosis, prevention, and treatment. Based on The Merck Manual of Diagnosis and Therapy this edition transforms the language of the professionals' version into commonly used English.

Papers Invited Full Text - Papers Invited was conceived and developed to assist researchers at all levels - scientists, professors, post-docs and students who are seeking publishing opportunities for their research papers. It presents a list of Calls for Papers issued by professionals.

Science Direct Full Text - Full-text articles, primarily science, technology and medicine (STM). social sciences; also includes some reference and e-books.

TOXNET/TOXLINE - Indexes publications on the toxicological, pharmacological, biochemical and physiological effects of drugs and other chemicals--including journal articles, monographs, technical reports, theses, letters, and meeting abstracts, papers and reports.

Research Labs

There are three research labs: Artificial Intelligence Lab, Bio-Electronics and Green Energy Research Labs. All labs are led by the industrial experts and ITU professors for researching the cutting edge technologies and products. Both labs provide the latest tools for best research and practice such as Synopsys and Cadence tools.

ITU Basketball Court

ITU's basketball court is open to students. Students must bring their own equipment. Shoes that make dark marks are prohibited, and it is advised that students bring athletic clothing.

Student Lounge

The student lounge is an area designated for students to sit and relax while studying. You'll find a billiards table, multiple areas to sit and study, and printing services.

8. Student Activities and Services

Academic Advisement

Each student is assigned an academic advisor, who will on a regular basis give academic advice regarding the student's progress.

Placement Assistance

ITU provides a variety of services to assist students in clarifying, planning, and achieving their career goals. Workshops will be held regularly on career planning, including self-assessment, resume writing, interviewing skills, and job search strategies. Programs will be developed that bring professionals from various fields to present information concerning career opportunities weekly in the Joint Seminar class required of all students. Students are encouraged to take advantage of this exposure to industry leaders and continually collect networking contact information from the Joint Seminar class. A special program of informational interviewing will link students with alumni in a variety of fields.

Student Health, Safety, and Housing

All full-time students are required to have their own medical insurance coverage. ITU will assist them in contacting appropriate insurance companies. The University does not provide on-campus housing for students. However, students should not have difficulty finding accommodations near campus. Average monthly rent of a single room ranges from \$400-\$550.

Student Council

The ITU Student Council offers students the opportunity to participate in the governing of the institution. Elected officers interact regularly with assigned faculty advisors to coordinate student functions, organize extra-curricular activities, and offer student input concerning university policy.

Student Organizations and Alumni Association

Students at ITU are free to organize and to join associations whose stated purpose is consistent with the University's mission. All student organizations seeking ITU support must be registered. The ITU Alumni Association is operated under the Chancellor's Office of the University, keeping a current list of all alumni, and conducting alumni activities on a regular basis such as class reunions and career counseling.

Academic Achievement Recognition

Faculty and student awards are given annually during commencement ceremonies to recognize the outstanding achievements of faculty, staff, and students.

Student Tuition Recovery Fund

The Student Tuition Recovery Fund (STRF) was established by the Legislature to protect any California Resident who attends a private postsecondary institution from losing money if the student prepaid tuition and suffered a financial loss as a result of the school: closing; failing to live up to its enrollment agreement; or, refusing to pay a court judgment.

To be eligible, the student must be a "California resident" and reside in California at the time the enrollment is signed or when the student receives lessons at a California mailing address from an approved institution offering correspondence instruction. A student temporarily residing in California for the sole purpose of pursuing an education, specifically one holding a student visa, is not considered a "California resident."

To qualify for STRF reimbursement you must file a STRF application within one year of receiving notice from the council that the school is closed. If you do not receive notice from the council you have four years from the date of closure to file a STRF application. If a judgment is obtained you must file a STRF application within 2 years of the final judgment.

It is important that you keep copies of the enrollment agreement, financial aid papers, receipts or any other information that documents the monies paid to the school. Questions regarding the STRF may be directed to: Bureau for Private Post-Secondary Education.

University Officers

Shu-Park Chan, Ph.D.	Founder/President Emeritus
Yau-Gene Chan, M.F.A.	President/CEO
Gerald A. Cory, Jr., Ph.D.	Executive Vice President (Asia)
Gregory M. St. L. O'Brien, Ph.D.	Executive VP (USA)/ Dean for Doctoral Programs
Liz, Li, Ph.D.	Dean of Faculty/ Chief Academics Officer
Mikel Duffy, Ph.D.	Associate Executive VP

Academic & Administrative Officers

Angie Lo	Director of Campus Operations & International Projects/ Assistant to the President
Ahmad Shaar	Director of Institutional Research
Marissa Garcia	Human Resources Manager
Cindy Dinh	Director of Communications
Venkat Induru	Marketing & Quality Control Officer
Sunit Peter Edu Solomon	EX support
Kranthi K. Lammatha	IT Manager
Suman Bhargava	Marketing Manager
Hubert Chang	Website Manager
Ariel Tam	Administrative Assistant
Desi Arceo	Facilities Coordinator
Griselda Dominguez	Student & Career Services

Department Chairs

May Huang, Ph.D.	Department Chair of Electrical Engineering
Cornel Pokorny, Ph.D.	Department Chair of Computer Science
Barbara Hecker, Ph.D.	Department Chair of Engineering Management
Amal Mougharbel, Ph.D.	Department Chair of Business Administration/ SAP University Alliance Program Faculty Coordinator,
Cedrick Chan,	Department Chair of Digital Arts/ Vice President of Digital Media

Admissions and Student Records Department

Sara Javid	University Registrar/ Director of Doctoral Admissions/ Director of Student Affairs
Amy Chaung	Admissions Officer
Jose Dominguez	Admissions Officer
Veronica Ramirez	Admissions Assistant
Evelyn Tsao	Assistant Registrar
David Kim	Student Records Specialist
Gloria Dalleske	Student Records Specialist

Accounting Department

Edward Lam, CPA	Chief Financial Officer
Hayat Adem	Staff Accountant
Derek Li	Staff Accountant
Leo Fung	Staff Accountant

Board of Trustees

Chi-Chia Hsieh, Ph.D. (*Chairman*)

Co-Founder and Vice Chairman
Microelectronics Technology, Inc.
Hsinchu, Taiwan

Yau-Gene Chan, MFA

President/CEO

ITU

San Jose, CA

Mr. Michael Hu, MBA

CEO

OIV Mail

Palo Alto, CA

Gerald A. Cory, Ph.D.

Founding VP

University of Phoenix;

Former CEO

Tandem Computers/Japan;

Executive VP (Asia)

ITU

San Jose, CA

Thomas B. Gold, Ph.D.

Professor of Sociology

University of Berkley

Berkley, CA

Bhaskar Kura, Ph.D., P.E.

Associate Dean of Engineering,

Professor and Graduate Program

Coordinator of Civil & Environmental

Engineering,

Director of Maritime Environmental

Resources & Information Center

(MERIC),

University of New Orleans

New Orleans, LA

Mr. Arnold Wong

CFO and Co-Founder

Inclin, Inc.

Mountain View, CA

Mr. Ivan Chan

Director. Head of Foreign Exchange

Sales Asia

Credit Suisse Bank

Alvin H. Cheung, PharmD, MHSA

CEO

California Northstate College of

Pharmacy

Sacramento, CA