Silicon Valley University

2015 Catalog

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The information in this catalog is effective from January 1st, 2015 to December 31st, 2015

Please note: The information contained in this Catalog is updated every school year.
This Catalog is designed to provide useful information to prospective, enrolled students and general public. It can be found on Silicon Valley University (SVU) official website. SVU may not be held responsible for any errors of a typographical nature although all reasonable steps have been taken to correct such errors.SVU reserves the rights to make amendments or modifications or change any information contained in this catalog without notice and without compensation whatsoever.

This Catalog is designed to provide useful information to prospective, enrolled students and general public. Students are encouraged to review this catalog and School Performance Fact Sheet prior to signing an Enrollment Agreement. As a prospective student, you are also encouraged to review this catalog and School Performance Fact Sheet, which must be provided to you prior to signing an enrollment agreement.

SVU has not filed bankruptcy, is not operating as a debtor in possession, has not filed a petition within the preceding 5 years, nor has had a petition in bankruptcy filed against in within the preceding 5 years that resulted in re-organization under Chapter 11 of the United States Bankruptcy Code.

SVU does not offer any online courses. All class sessions are held on campus located at 2010 Fortune Drive, San Jose, CA 95131.

SILICON VALLEY UNIVERSITY
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SVU 2015 ACADEMIC CALENDAR

SPRING 2015		**< JANUARY 12 – APRIL 25, 2015 >**
JANUARY		
09	Fri	New Student Orientation & English placement examination
12	Mon	Classes begin
19	Mon	1st session of ESL classes begin
23	Fri	Last day to add/drop courses
FEBRUARY		
16	Mon	President's Day (campus closed)
27	Fri	1st session of ESL classes end
MARCH		
09	Mon	2nd session of ESL classes begin
13	Fri	Last day for graduation petition
APRIL		
06	Mon	Pre-registration for Summer Trimester 2015
17	Fri	2nd session of ESL classes end
20 – 25	Mon-Sat	Final examinations
25	Sat	Last day of classes

SUMMER 2015		**< MAY 11 – AUGUST 22, 2015 >**
MAY		
08	Fri	New Student Orientation & English placement examination
11	Mon	Classes begin (Regular and *1st Summer Intensive session)
18	Mon	1st session of ESL classes begin
22	Fri	Last day to add/drop courses
25	Mon	Memorial Day (campus closed)
JUNE		
26	Fri	1st session of ESL classes end
29-July 01	Mon-Wed	* Final examinations for 1st Summer Intensive session
JULY		
01	Wed	* 1st Summer Intensive session ends
02	Thu	* 2nd Summer Intensive session starts
04	Sat	Independence Day (campus closed)
06	Mon	2nd session of ESL classes begin
10	Fri	Last day for graduation petition
AUGUST		
03	Mon	Pre-registration for Fall Trimester 2015
14	Fri	2nd session of ESL classes end
17 – 22	Mon-Sat	Final examinations
22	Sat	Last day of classes
29	Sat	Graduation Ceremony

FALL 2015		**< SEPTEMBER 8 – DECEMBER 19, 2015 >**
SEPTEMBER		
04	Fri	New Student Orientation & English placement examination
07	Mon	Labor Day (campus closed)
08	Tue	Classes begin
14	Mon	1st session of ESL classes begin
18	Fri	Last day to add/drop courses
OCTOBER		
23	Fri	1st session of ESL classes end
NOVEMBER		
02	Mon	2nd session of ESL classes begin
06	Fri	Last day for graduation petition
26 – 27	Thurs-Fri	Thanksgiving Holidays (campus closed)
30	Mon	Pre-registration for Spring Trimester 2016
DECEMBER		
11	Fri	2nd session of ESL classes end
14-19	Mon-Sat	Final examinations
19	Sat	Last day of classes

*Summer Intensive Session consists of core and pre-requisite courses which will be taught in 7½ weeks. Students are required to attend classes twice a week instead of once per week.

THE UNIVERSITY

Mission & Goals

The primary mission of Silicon Valley University **(SVU)** is to provide excellent educational programs in both undergraduate and graduate levels to equip and prepare students with the right set of knowledge and skills for careers in the high tech industry and competitive global business arena.

This mission is accomplished by leveraging Silicon Valley's expertise in technology and business sectors to:

- Provide students with faculty who are experts in their field and are currently working in the high tech industry and global business sectors;
- Provide students with a learning environment that utilizes the latest available technology in use in the work place;
- Prepare students with the practical skills necessary for performing at the highest levels in their chosen professions;
- Develop the capacity for independent and critical thinking; promote entrepreneurship by encouraging new ideas for business initiatives and product development, and
- Improve the English language skills of international students in preparation for study in America, or for personal or professional development.

Campus Description

SVU is located in Silicon Valley (San Jose, California), the hub of the US high-tech industry and global business. The university occupies space in a Class A office building. The 70,000 square foot office space consists of large classrooms for delivery of multimedia presentations to large groups and smaller classrooms for small-group discussions. All classes are being held in the newly remodeled campus. Other facilities of the university include the Library, Computer Room, and Student's Lounge which are all available for students during school hours. The Student Office and other administrative offices provide needful assistance to students 6 days a week.

Mobile Internet Services

To support mobile internet and cloud computing, the whole digital campus is fully covered by 802.11 a/b/g/n Wi-Fi access points back-hauled to FE/GE/10-GE backbone network switch hierarchic in the 7/24 air-conditioned private data center.

Via Wi-Fi access point and backbone switch infra-structure plus internet, students, faculty, and staff can use mobile internet devices (i.e., Apple iPad, Apple iPhone, Android Tablet, Android Phone, Macbook Air, Google Tablet, Ultrabook, or Microsoft Surface) to access cloud computing inside the whole campus. When the license is permitted through proxy servers, students can then access any software tools from anywhere at any time. Student's learning experience cannot be made easier with all these services.

In addition, SVU has a self-developed and customized Apple iPhone apps that provide services to both our current students and future students. For instance, students can check their grades or view the latest school news and events just by logging in to the SVU apps. SVU also uses an Apple iPad as a campus kiosk guide system, utilizing the most advanced RFID technology, for students to view class schedules and take attendance during school hours.

INSTRUCTIONAL RESOURCES

To help students obtain competitive advantages in the real working environments from classrooms and to help students to acquire the knowledge through hands-on modern methodology effectively and efficiently, SVU participates in many university programs provided by the leading companies in their industries, such as Apple, Microsoft, Oracle, SAP and Cadence. Students who learn the usage of the emerging tools in the real world can definitely grant themselves better job opportunities. SVU's instructional resources aim to do just that.

Apple iOS Developer University Program Membership

SVU has joined the Apple iOS Developer University Program to provide a wide range of technical resources to assist students in design, development, and testing. The iOS apps include iOS Dev Center, iOS Developer Library, and Development Videos.

Apple iTunes University Program Membership

SVU has joined the Apple iTunes University program to offer class materials online for allowing students to download streaming video and documents to PCs, laptops, and mobile devices/equipment.

Microsoft MSDN Academic Alliance (MSDNAA) Membership

SVU has subscribed to Microsoft MSDN Academic Alliance (MSDNAA) membership to make the latest Microsoft software available in labs and classrooms. The Microsoft MSDNAA program offers Microsoft developer tools for Science, Technology, Engineering, and Math (STEM) fields, including the up-to-date Visual Studio, Windows Operating Systems, Windows Server,

.NET Framework, computer cluster server, SQL server, Mobile SDK and more than 300 tools.

Oracle Academy Membership

SVU is a member of Oracle Academy. SVU provides Oracle 11g Real Application Cluster (RAC) Enterprise version database to students and faculty. Oracle RAC database services is a shared cache clustered database architecture that overcomes the limitations of traditional shared-nothing and shared-disk architectures for unbeatable database performance, scalability and reliability without requiring changes to existing Oracle Database applications. Oracle RAC has been successfully deployed by thousands of Oracle customers, allowing these customers to use clustered database servers for a simplified, efficient and successful delivery of Database Services on the Cloud.

Higher Education User Group and University Alliance Program of SAP Membership

SVU has formed a membership with Higher Education User Group (HEUG) and University Alliance Program offered by SAP (Acronym of Systems, Applications, and Products in Data Processing) North America to use the tools from Oracle E-Business Suite and SAP software for faculty members and students to enhance the academic and professional learning outcomes. The Oracle E-Business Suite and SAP software tools has been integrated into the business curriculum such as Enterprise Resources Planning (ERP), Human Capital Management (HCM), Supply Chain Management (SCM), Business Process Management (BPM), Customer Relationship Maintenance (CRM), Project Management (PM), and Accounting and Finance (ACCT/FN). The tools from Oracle E-Business Suite, Oracle Financials Applications, and SAP software will provide students with hands-on experiences and enhance learning experience by equipping students with marketable skills.

Cadence Design Tool Users Group Membership

SVU is a member of Cadence design tool users group. SVU provides Cadence computer-aided electronic design tools to students and faculty. Cadence tools offer proven solutions for every aspect of electronic design. Leading semiconductor, computer systems, communications equipment, and consumer electronics companies around the world rely on Cadence tools to design their products. Cadence design package includes system-level design bundle, design and verification bundle, custom integrated circuits bundle, deep submicron bundle, and PCB systems bundle, which is sufficient for chip-level and board-level design.

Data Communication/Telecommunication

SVU offers a state-of-the-art network equipment such as Cisco routers, Dell switches, Linksys wireless routers, Apple Computer wireless routers, Cisco VPN remote access servers. Students can access these resources from any onsite networked workstation or remote to configure or control those equipment.

Linux/Unix Private Cluster Node

The Linux/Unix system is provided to students in labs to understand the cloud computing paradigm and framework. The cloud computing infrastructure can be used for sharing, scheduling, reliability, availability, elasticity, privacy, provisioning and geographic replication.

Electronic Resource Center & Library

As part of its effort to provide instruction using the latest internet technologies, the university has established a web-based Electronic Resource Center. The center is a digital research facility, created to provide students with the opportunity to make the most use of vast information resources available on the internet.

The university has an onsite library which contains publications in the fields of Business, Computer Science and Engineering, and General Education. Faculty members and students can access major professional journals and scholarly articles through nationally acclaimed databases such as ProQuest, ProQuest/ABI, and IEEE. These can be accessed on-site or via the university's remote proxy services from anywhere, at any time.

The university library serves its students and faculty free of charge. The library has thousands of hard copy materials in its collections. Both students and faculty also have access to SVU's e-library. Students are expected to follow the university library policy while using these resources.

Library Hours:
Monday through Friday: 11 am to 7 pm
Saturday: 10 am to 6 pm

SVU students have convenient access to a number of excellent libraries including San Jose State University (SJSU) and Cal State University East Bay (CSUEB). Students can also obtain free library cards from the Alameda County and Santa Clara County public library system, and make use of the Link+ unified catalog system as well.

ACCREDITATION AND APPROVAL STATUS

Silicon Valley University is accredited by the Accrediting Council for Independent Colleges and Schools (ACICS) to award Bachelor's degrees, Master's degrees, Doctoral Degrees, and Certificates.

The Accrediting Council for Independent Colleges and Schools is listed as a nationally recognized accrediting agency by the United States Department of Education and the Council for Higher Education Accreditation.

SVU is a private post-secondary institution which has been licensed to operate by the Bureau for Private Postsecondary Education (BPPE).

Any questions a student may have regarding this catalog that have not been satisfactorily answered by the institution may be directed to the Bureau for Private Postsecondary Education. Also, a student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by phone call or by completing a complaint form, which can be obtained on the bureau's internet Web site:

Bureau for Private Postsecondary Education
2535 Capitol Oaks Drive, Suite 400
Sacramento, CA 95833
P.O. Box 980818, West Sacramento, CA 95798-0818
http://www.bppe.ca.gov
Phone: (888) 370-7589
(916) 431-6595
Fax: (916)263-1897

CORPORATE STATUS

Silicon Valley University is organized under California Corporate Law as a nonprofit, public-benefit corporation and is deemed tax-exempt, as applies to corporations falling within the IRS 501(c) (3) ruling.

SILICON VALLEY UNIVERSITY ADMINISTERS ALL ITS PROGRAMS WITHOUT REGARD TO RACE, ETHNIC ORIGIN, AGE, OR SEX. SVU DOES NOT DISCRIMINATE IN THE ADMINISTRATION OF ITS EDUCATIONAL POLICIES, ADMISSIONS POLICIES, SCHOLARSHIPS, OR OTHER SCHOOL ADMINISTERED PROGRAMS.

Governing Board

SVU is governed by its Board of Trustees. The Board of Trustees consists of the following people:

Dr. Jerry Shiao
President of SVU
San Jose, California
Chairman of the Board

Ms. Seiko Cheng
Co-Founder of SVU
San Jose, California
Treasurer of the Board

Dr. Len-Yi Leu
Senior Director of TSMC
San Jose, California
Secretary of the Board

Dr. Mark Chen
CEO, Agnes USA Corporation
Fremont, California

Ms. Ellie Chou
City Council
Kaohsiung, Taiwan, ROC

They provide voluntary service and receive no remuneration for their services on the Board, as SVU is a nonprofit, public-benefit educational institution.

UNIVERSITY PROGRAMS

Degree Programs

Bachelor of Science in Computer Science (BSCS)
Bachelor of Science in Computer Engineering (BSCE)
Bachelor of Business Administration (BBA)
Master of Science in Computer Science (MSCS)
Master of Science in Computer Engineering (MSCE)
Master of Business Administration (MBA)
Doctor of Computer Engineering (DCE)

Certificate Programs

Computer Engineering and Telecommunication Engineering
Database Design and Software Engineering
English as a Second Language (ESL)

NOTICE CONCERNING TRANSFERABILITY OF CREDITS AND CREDENTIALS EARNED AT SILICON VALLEY UNIVERSITY

The transferability of credits you earn at SVU is at the complete discretion of an institution to which you may seek to transfer. Acceptance of degree(s) you earn in SVU is also at the complete discretion of the institution to which you may seek to transfer. If the educational program that you earn at this institution is not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an

institution to which you may seek to transfer after attending SVU to determine if your degree(s) will transfer.

ADMISSION TO THE UNIVERSITY

General Admission

SVU is an equal opportunity institution. Graduation from high school or its equivalent is necessary for enrollment. Students are admitted on the basis of their projected ability to meet academic standards. The university evaluates both objective and subjective data to select its students. The factors that are taken into consideration during the selection process include, but are not limited to: the potential of the candidate to successfully complete the desired program, the candidate's past academic performance record, and the amount and quality of the candidate's prior experience and training.

The university's application and selection procedures for its programs include the following requirements:

A) Applicants must submit a completed University Application for Admission and pay a nonrefundable application fee in the form of a check or money order payable to "Silicon Valley University."

B) All applicants must arrange to submit original transcripts from previously attended institutions. Students holding foreign degrees must make arrangements with SVU administration to have prior credit hours evaluated for equivalency. Contact SVU for further information regarding this process.

C) Students planning to attend SVU must submit their application material and associated documents before the deadlines posted in the academic calendar. Each trimester has a separate deadline.

Certificate Programs

Applicants to a Certificate Program (except ESL) must have a Bachelor's degree or equivalent and have completed enough basic math and computer science courses to successfully perform the required work. The Certificate Programs are non-degree programs, which do not offer credits for classes taken. All applicants to a Certificate Program must complete an enrollment application and pay a nonrefundable application fee in the form of a check or money order made payable to "Silicon Valley University."

Bachelor's Degree Programs

Admission Directly from High School
Exceptionally qualified high school graduates who have fewer than 40 credit hours of college credit may be granted admission. These students must submit the high school official transcript showing a minimum GPA of 1.75 (or its equivalent such as GED), and copy of the diploma for admission.

Maximum Transfer Requirements
The maximum number of 72 credit hours can be transferred prior to enrollment at SVU from another accredited institution towards a Bachelor degree at SVU.

Lower Division Requirements
Applicants who have not met all of the lower division requirements upon application (see section on Undergraduate Programs) may be accepted pending completion of those requirements before graduation. An individual evaluation of accepted transfer credits as well as general education deficiencies will be provided by the university at the time admission is offered.

Lower division courses that are not yet taught at the university must be taken at local community colleges or otherwise approved accredited institutions in order to successfully meet the program requirement.

Master's Degree Programs

All applicants to a Master's degree program must hold a Bachelor of Arts, a Bachelor of Science, or an equivalent degree from an accredited or approved college or university to be admitted to a Master's program at SVU. An official transcript with the student's baccalaureate degree must be submitted to the university. Students must also demonstrate adequate proficiency in mathematics and English. Students lacking this proficiency may still be admitted as conditional students; however, students must take the appropriate courses required to achieve the proficiency.

All applicants to a Master's degree program must have a Bachelor's degree or its equivalent from an accredited institution with a minimum GPA of 2.5.
All applicants to a Master's degree program must submit previous transcripts for evaluation.

Continuing Students

Students who completed a program or degree at Silicon Valley University and plan to obtain a second or higher degree at SVU will be treated with new admission status. A new student ID will be issued and the student will have to submit all the required credentials and documents (e.g. all official transcripts previously obtained, diploma copy, etc.; for more information please refer to General Admission on page 3) in order to be accepted in the program.

Admission Requirements

A) All international applicants must certify that they have adequate financial resources to pay for all expenses while attending Silicon Valley University.

B) All coursework at SVU is offered entirely in English. Applicants whose native language is not English must demonstrate their English proficiency by providing an official score report from the Test of English as a Foreign Language (TOEFL®), International English Language Testing System (IELTS™), or the Test of English for International Communication (TOEIC®).

C) Applicants who have earned a degree from an institute where the language of instruction is English, (e.g. U.S., United Kingdom, Australia, Canada and New Zealand) are exempt from submitting a TOEFL®/IELTS™/TOEIC® score.

Instructions for Local/Resident Applicants

A) Submit the completed application form with attached $75 USD application fee and mail to the Admissions Office.

B) Request that one official transcript from each institution attended be sent to the Admissions Office. Applicants should allow those institutions about six weeks to process their request. This material may be sent either separately or with the entire application package. To expedite the application, the admission office recommends that all materials should be sent together.

Instructions for International Applicants

A) Same as the instructions for local/resident applicants (above).

B) In addition to the instructions for local/resident applicants, international applicants must:

1) Submit a Financial Support Statement to the Admissions Office. Recommendation for admission cannot be certified without this information.
2) Submit official transcripts of records from all universities attended to the Admissions Office.
3) Meet the minimum standards of the English proficiency requirement by taking the TOEFL®/IELTS™/TOEIC® exam.

Notice: SVU does not provide visa services nor does it vouch for the status of students for purposes of a visa.

Additional Instructions for Applicants Whose Degree is from a Non-US Institution

Applicants must also provide:

A) Official documentation of all courses taken and grades received (transcripts of records) from each secondary, undergraduate and postgraduate institution attended. Transcripts of records should be issued in English or must be accompanied by notarized English translations.

B) Official certification of degrees and dates awarded, issued in the original language. Academic transcripts of records must have a seal and signature in ink from the institution's authorized official, such as a registrar.

Instructions for Submitting English Test Result

Original IELTS™ scores must be submitted by mail or in person to Silicon Valley University. TOEFL®/ TOEIC® scores may be sent directly to Silicon Valley University (TOEFL®/SAT institution code: 6591) or in person. Information and applications for TOEFL®, IELTS™, or TOEIC® tests may be obtained by contacting:

TOEFL®
Educational Testing Service
P.O. Box 6151
Princeton, NJ 08541-6151
Website: www.ets.org/toefl
Email: TOEFL@ets.org

IELTS™ INTERNATIONAL
825 Colorado Boulevard, Suite 112
Los Angeles, CA 90041
Website: www.ielts.org
Email: IELTS@IELTSintl.org

TOEIC®
TOEIC Service International
TOEIC Testing Program
Educational Testing Service
Rosedale Road
Princeton, NJ 08541 USA
Website: www.ets.org/toeic
Email: TOEIC@ets.org

The Certificate of Eligibility for Nonimmigrant Student will be prepared for and issued to the student after the application and all necessary documents have been received and thoroughly reviewed and the Office of Admissions has made a decision to accept the applicant as an SVU student.

TRANSFER STUDENTS

Students may transfer credits from their previously attended school if the school is an accredited institution

verified by SVU. Credit transfers could only be honored during first trimester of enrollment. Credits earned within the same academic level are transferrable subject to the approval of the Dean or Program Administrator. The Dean or Program Administrator will evaluate student transcripts individually and honor transferrable credits only if the course description matches to the course description of SVU. A maximum of 3 credits for each lecture class and 1 credit for lab class is allowed for transferring. Students have the option to challenge any issues pertaining to the transfer of credits by meeting with the Dean or Program Administrator during the student's first trimester attendance at SVU. The student must have the proof documentation to support the challenge. SVU does not currently have an articulation or transfer agreement with any other college or university.

Bachelor's Degree
SVU will evaluate undergraduate academic credit for course equivalencies from four-year institutions and community colleges accredited by agencies recognized by the United States Department of Education. Students must request that transcripts from the accredited institutions in which they have previously attended be sent to the Student Office for evaluation. The procedure for course equivalence is defined in the Evaluation of Transfer Credits. SVU will accept a maximum of 72 credits transferred for the BSCS, BSCE and BBA programs. All transfer course work requires an overall grade point average of "C", 2.0 on a 4.0 scale. The letter grades and GPA are not transferrable.

Master's Degree
SVU will evaluate graduate academic credit for course equivalences from institutions of higher learning and accredited by agencies recognized by the United States Department of Education. Students must request that transcripts from the accredited institutions in which they have previously attended be sent to the Student Office for evaluation. The procedure for course equivalence is defined in the Evaluation of Transfer Credits. SVU will accept a maximum of 9 credits transferred for the MSCS, MSCE, and MBA programs. All transfer course work require an overall grade point average of "B-", 2.7 on a 4.0 scale. Letter grades and GPA are not transferrable.

Evaluation of Transfer Credits
The evaluation of academic credits will be performed by the Dean or Program Administrator. The Dean will use the syllabi from the transferring institution and the SVU syllabi to determine course equivalency. The Dean or Program Administrator will:

- Compare the course description of the syllabus of the transfer course with the course description of the syllabus of an equivalent course in SVU.
- Allow the maximum of 3 credits for a lecture course.
- Allow a lab course to be transferred only if the lab course has a lecture course that is transferred. The maximum number of credit is 1 for a lab course.
- After course equivalence is determined, only the credit is transferred. The grade from the transferred class is not used in the student's cumulative GPA.

The student has the option to petition the transfer of credits by meeting with the Dean or Program Administrator during the student's first trimester at SVU. The student must bring documentation (course syllabus) to support the challenge. After the first trimester SVU will not accept petitions for re-evaluation of the transfer of credits.

Credit for Prior Experiential Learning

SVU does not recognize credit for prior experiential learning.

ENGLISH PROFICIENCY

Applicants of Silicon Valley University (SVU) whose native language is not English have to demonstrate an established level of English language proficiency through one of the following tests: the TOEFL® (Test of English as a Foreign Language), the academic format of the IELTS™ (International English Language Testing System), or the TOEIC® (Test of English for International Communication), etc.

- The TOEFL® Test - Test of English as a Foreign Language. The TOEFL® test is the most widely accepted English-language test in the world.

- IELTS™ is the International English Language Testing System. It measures ability to communicate in English across all four language skills (listening, reading, writing, and speaking) for individuals who intend to study or work where English is the language of communication.

- The TOEIC® Test - Test of English for International Communication. The TOEIC® test provides reliable measurement of English proficiency and is used by hundreds of companies, government agencies, and English language learning programs.

The test must be recent; it should be within two years of the time applying. The original test scores are required to be submitted to SVU by applicants, either in person or by mail.

Degree	Institutional TOEFL®	Internet-based TOEFL®	IELTS™	TOEIC®
Bachelor	500	61	5.5	550
Master	525	71	6.0	680
Doctoral	550	80	6.5	790

The following table explains the TOEFL®, IELTS™, and TOEIC® requirements at SVU. Note that there is no separate essay score on the internet-based TOEFL® as essay scores are included in the writing score. Although the internet-based TOEFL® includes a speaking component, a minimum score on the speaking section is not required.

Applicants who have not taken the TOEFL®, IELTS™, or TOEIC® test, or those who have not passed the proficiency requirements stated above, will be required to take the English Placement Test during the first week at SVU.

If an applicant does not qualify for provisional admission as indicated above, the applicant will have to arrange to have an English language evaluation upon arrival and will be recommended, if necessary, any required steps for remediation. This may include passing one or more English classes or retaking the TOEFL®/IELTS™/TOEIC® or equivalent proficiency test. Also note that the applicant has the option to retake the TOEFL®/IELTS™/TOEIC® prior to arriving at SVU and if the new scores exceed the minimum required, the applicant will not have his/her English evaluated upon admission.

Waiving the TOEFL®/IELTS™/TOEIC® Requirements

International applicants who have earned Bachelor's or higher degrees from English-speaking accredited institutions in the U.S., United Kingdom, Australia, Canada and New Zealand do not have to submit TOEFL®/IELTS™/TOEIC® scores.

The TOEFL®/IELTS™/TOEIC® requirement may be waived on a case-by-case basis for students who have earned a degree from a foreign institution where the language of instruction was English. Documentation that the school's language of instruction was English must be provided.

English Placement Test

- Students who do not have a TOEFL® iBT score of 61 for the BBA/BSCS/BSCE degree programs or 71 for the MBA/MSCS/MSCE degree programs or 80 for the DCE degree program; or IELTS™ score of 5.5 for the BBA/BSCS/BSCE degree programs or 6.0 for the MBA/MSCS/MSCE degree programs or 6.5 for the DCE degree programs; or a TOEIC® score of 550 for the BBA/BSCS/BSCE degree programs or 680 for the MBA/MSCS/MSCE degree programs or 790 for the DCE degree program, are required to take an English Placement Test upon arrival to the University.
- A student who achieves a passing score in all skill areas, including Listening & Speaking, Reading & Writing and Conversation & Pronunciation are recommended for regular academic coursework.
- A student scoring below designated cutoff points for Basic, Intermediate, and Advanced level in one or more skill areas on the placement test will be required to enroll in ESL courses at the appropriate level. Depending upon a student's placement test score, the student may test out of a particular skill and/or score high in one skill areas but low in another, and as a result, it is possible that the student is enrolled in different levels of skill area.
- Students may take the Institutional TOEFL® examination at the end of the academic trimester at SVU. Students who get a passing score on the examination have the option of not taking ESL courses and will be recommended to take regular degree courses at SVU.
- Students are allowed to be enrolled in degree courses while attending the ESL program at the same time. Policy and restriction are stated under the ESL program description.

English as a Second Language (ESL) Program Structure

SVU offers ESL classes to foreign students who need to improve their proficiency in English or waive an official test score. The purpose of the ESL program is to provide students with the opportunity to increase English language mastery in order to perform successfully in degree classes. During the first week of each trimester, students are required to take the English Placement Exam offered at SVU. Based on the exam results, students will be placed in the levels accordingly. Students at SVU are allowed to take degree classes concurrently with the ESL classes; depending on the level, students can take either one degree class (ESL200), two degree classes (ESL300), or three degree classes (ESL400). Successful completion of the ESL program is based on a passing TOEFL score or passing the English Placement Test at SVU. Students with inadequate comprehension of English must continue taking ESL for the following trimester until the requirements are met.

The core objectives of the ESL program are to:

- Prepare students with proficient English ability in order to communicate effectively in professional, business, and personal settings
- Prepare students to perform successfully in degree classes
- Empower students to improve English speaking skills by using English in authentic settings

The program consists of 3 levels and each level has Listening and Speaking, Conversation and Pronunciation, and Reading and Writing:

The course numbers for each level are listed as:

(a) Beginning Level
(1)ESL200 - ESL204
(2)ESL250 - ESL254

(c) Intermediate Level
(1)ESL300 - ESL304
(2)ESL350 - ESL354

(d) Advanced Level
(1)ESL400 - ESL404
(2)ESL450 - ESL454

The numbers of hours of instruction per week is as follows:

ESL200 - ESL204: 20 hours per week
ESL250 - ESL254: 20 hours per week
ESL300 - ESL304: 20 hours per week
ESL350 - ESL354: 20 hours per week
ESL400 - ESL404: 20 hours per week
ESL450 - ESL454: 20 hours per week

Students who are placed in ESL 400 (Advanced level) must take and pass the Institutional TOEFL® that represents the exit exam for the English as a Second Language (ESL) program. ESL 400 students who do not pass the exit exam (score less than 500 on Institutional TOEFL®) are required to repeat the ESL 400 level course until the student achieves passing marks on the exit exam. Students who are placed in ESL 200 (Beginning level) or ESL 300 (Intermediate level) must take and pass the final exam administered by the course instructor at the end of the trimester as the exit exam. Students who do not pass the exit exam in ESL 200 and ESL 300 are required to repeat the same level the following trimester.

Students who successfully complete the requirements for each course and achieve the minimum passing score on the exit examinations for each course can request a Certificate of Competency in English. Students who fail to achieve any of the requirements needed to earn the Certificate of Competency can instead request a certificate indicating the total number of completed hours of instruction received in ESL. Minor deviations from the above guidelines can be approved by consultations between the ESL instructor(s) and the student advisor.

TUITION AND FEES

SVU reserves the right to increase or modify any listed fees, and fees are subject to change within one trimester's notice. All SVU fees are subject to change upon approval by the Board of Trustees.

Tuition for Bachelor's and Master's Programs

Undergraduate Tuition	**$325** per credit hour
Graduate Tuition	**$425** per credit hour

(Master's degree program students enrolling in undergraduate preparatory courses which do not count toward the graduate program)
$325 per credit hour
(Master's degree program students enrolling in 400 level courses which count toward the graduate program)
$425 per credit hour

Laboratory Course Fee

Undergraduate Program	**$325** per credit hour
Graduate Program	**$425** per credit hour

Any lab credits earned from the undergraduate 400 level courses can be counted toward the graduation requirement.

Professional Development Courses

Undergraduate Auditing Fee	**$325** per credit hour
Graduate Auditing Fee	**$425** per credit hour

CPT Fee (equivalent to one course tuition): CPT stands for Curricular Practical Training, an optional work experience course for current students. Credits earned from the CPT internship course cannot be counted toward the graduation requirement.

Summer Registration. It is the obligation of students to make sure that they take all the core and pre-requisite courses which are offered only during the summer trimester. Skipping a summer term might cause disruptive delays toward graduation.

English as a Second Language
$2,520 per trimester
$420 per class

Tuition for Doctoral Program

Doctoral Tuition (Per credit hour)	**$450**
Doctoral Written Comprehensive Exam	**$450**
Doctoral Written Qualifying Exam	**$450**

Laboratory Course Fee
$425 per credit hour

Tuition for courses taken to fulfill the graduation requirements for the DCE program is **$425** per credit hour for the first 36 credit hours and **$450** per credit hour for the remaining 72 credit hours which normally will be the student's research and advanced concentration area.

General Fees

Registration Fee (Non-Refundable) **$250** per trimester
Learning Resource Fee **$75** per trimester

Other Fees and Expenses

Application fee	**$75**
Late payment fee	**$100**
English Placement Examination Fee	**$50**
Late Registration	**$75**
Institutional TOEFL® Exam Fee	**$50**
Regular Document Processing Fee	**$10-25**
Urgent Request Fee	**$25**
Changing Major Fee	**$50**

Official Transcript Request
- Pick Up **$10**
  (Each additional copy is $10 extra.)
- Domestic Mail **$35**
  (Each additional copy is $10 extra.)
- International Mail **$85**
  (Each additional copy is $10 extra.)
  (Mailing costs may be higher depending on destinations.)

Add/Drop Course Fee	**$50**
Graduation Fee	**$275**
Student ID Card Replacement	**$25**
Returned Check Fee	**$50**
Remittance in/out	**$50**
Deferred Admission	**$50** or more

There is a 2.75% fee for credit/debit card transactions.

Accepted Payments

Cash, Cashier Check, Money Order, Demand Draft, VISA, Master Card, and Debit Card are accepted. (NO PERSONAL CHECKS)

Full-time Students' Estimate Costs

	Cost per trimester	Total cost of the program
Bachelor's programs	$4,225	$45,035
Master's programs	$4,150	$16,600
Doctoral program	$4,375	$51,600
ESL program	$2,845	$8,535

Note: The displayed tuition cost of program varies by the credit hours successfully transferred into your program of study and/or pre-requisite courses required for your program of study.

CANCELLATION AND REFUND POLICIES

For detailed cancellation and refund policies, please refer to the student enrollment agreement. The following statement summarizes the policies:

Buyer's Right to Cancel

You have the right to cancel your agreement for a program of instruction, without any penalty or obligations, through attendance at the first class session or the seventh calendar day after enrollment, whichever is later. After the end of the cancellation period, you also have the right to stop school at any time, and you have the right to receive a pro rata refund if you have completed 60% or less of the instruction.

Withdrawal and Refund Schedule

You may withdraw from the school at any time after the cancellation period (described above) and receive a pro rata refund if you have completed 60 percent or less of the scheduled hours in the current payment period in your program through the last day of attendance. The refund will be less a registration fee, and less any deduction for equipment not returned in good condition. If the student has completed more than 60% of the period of attendance for which the student was charged, the tuition is considered earned and the student will receive no refund.

For the purpose of determining a refund under this section, a student shall be deemed to have withdrawn from a program of instruction when any of the following occurs:

- The student notifies the institution of the student's withdrawal or as of the date of the student's withdrawal, whichever is later.
- The institution terminates the student's enrollment for failure to maintain satisfactory progress; failure to abide by the rules and regulations of the institution; absences in excess of three (3) weeks; and/or failure to meet financial obligations to the School.
- The student fails to return from a leave of absence.

For the purpose of determining the amount of the refund, the date of the student's withdrawal shall be deemed the last date of recorded attendance. The amount owed equals the daily charge for the program (total institutional charge, minus non-refundable fees, divided by the number of hours in the program), multiplied by the number of hours scheduled to attend, prior to withdrawal. For the purpose of determining when the refund must be paid, the student shall be deemed to have withdrawn at the end of three (3) consecutive weeks.

Student Tuition Recovery Fund

The State of California created the Student Tuition Recovery Fund (STRF) to relieve or mitigate economic losses suffered by students in educational programs who are California residents, or are enrolled in a residency

program attending certain schools regulated by the Bureau for Private Postsecondary Education.

You may be eligible for STRF if you are a California resident or are enrolled in a residency program, prepaid tuition, paid STRF assessment, and suffered an economic loss as a result of any of the following:

1. The school closed before the course of instruction was completed.
2. The school's failure to pay refunds or charges on behalf of a student to a third party for license fees or any other purpose, or to provide equipment or materials for which a charge was collected within 180 days before the closure of the school.
3. The school's failure to pay or reimburse loan proceeds under a federally guaranteed student loan program as required by law or to pay or reimburse proceeds received by the school prior to closure in excess of tuition and other costs.
4. There was a material failure to comply with the Act or the Division within 30-days before the school closed or, if the material failure began earlier than 30-days prior to closure, the period determined by the Bureau.
5. An inability after diligent efforts to prosecute, prove, and collect on a judgment against the institution for a violation of the Act.

You must pay the state-imposed assessment for the Student Tuition Recovery Fund (STRF) if all of the following applies to you:

1. You are a student in an educational program, who is a California resident, or are enrolled in a residency program, and prepay all of part of your tuition either by cash, guaranteed student loans, or personal loans, and
2. Your total charges are not paid by any third-party payer such as an employer, government program or other payer unless you have a separate agreement to repay the third party.

You are not eligible for protection from the STRF and you are not required to pay the STRF assessment if either of the following applies:

1. You are not a California resident, or are not enrolled in a residency program, or
2. Your total charges are paid by a third party, such as an employer, government program or other payer.

ACADEMIC POLICIES AND REGULATIONS

Registration

Students are required to register on the registration day specified in the University calendar. Failure to register on that day may result in loss of space in that class. Full tuition fees and all prior debts must be paid in full on or before registration day of each academic year. Matriculation is subject to the satisfactory completion of all academic requirements and the receipt of a final transcript from all undergraduate universities attended.

Health Insurance

A health insurance plan is mandatory for all international students. All international students must have a valid health insurance plan while enrolled at SVU. Evidence of such a plan must be provided to SVU before successfully completing enrollment.

Students' Academic Advising

Students will be assigned a faculty advisor upon matriculation. Faculty advising should be considered a privilege of the academic process. This is a valuable opportunity to develop and sustain individual contacts between faculty and students on both academic and personal levels. It is the student's responsibility to meet with his/her faculty advisor at least once a trimester. If either the student or faculty member does not find the relationship helpful, either is free to seek a change. This request should be made to the Academic Dean.

Professional Behavior and Demeanor

Students enrolled at SVU must demonstrate professionalism while studying at school and in their real world career. Students are expected to hold themselves to high standards of ethical conduct while they attend SVU. In particular, plagiarism and cheating are not acceptable under any circumstances. For more details, please consult the Student Handbook.

Attendance Policy

SVU has a mandatory Class Attendance Policy which calls for students to attend a minimum of 80% of class lecture sessions in a course or be administratively withdrawn from the course. No excused absences are permitted. An absence for any reason, except emergencies or a compelling reason beyond the student's control, counts towards the maximum 20% absence allowed.

GRADING POLICY

General

The courses are designed to measure the students' progress by written and practical examinations. Specified objectives have been defined for each course to help the students and faculty members evaluate the degree of progress.

Evaluation Methods

Overall, student performance is evaluated differently in each class using one or more of the following methods:

A) Written examinations based on analytical or logic based inference questions, multiple choice questions, short answer questions, and essay questions.

B) Practical or laboratory examinations including: classroom observation of laboratory projects, independent hands-on design projects, and presentation/discussion of projects.

C) Written reports or research papers on assigned topics.

Review of Examinations

Examinations are graded by the faculty and are usually returned to students within seven days. Questions of the examinations are kept on file for review for one year.

Grade Reports

In cases when final grades are not available at grade reporting time, a grade of "I" is submitted to the Registrar in lieu of the course grade. "I" grades entered on the grade reports must be converted to student-achieved grades by the student completing the necessary requirements within two trimesters or it will be converted to an F. An up-to-date summary of student performance is maintained in the Student Office and is available to students for review.

Final course grades are given based on the four-point letter system, as follows:

Letter Grade	Grade Points
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
D-	0.7
F	0.0
U	0.0

Explanation of Grading Marks:

A: Highest level, showing excellence
B: Performance is good, but not the highest level
C: Performance is adequate
D: Performance is less than adequate
F: Course requirements have not been met
WF: Withdrawal with Fail - Drop a course after the eighth week. The class credits and grade will not be used in the cumulative GPA calculation.
I: Incomplete - Satisfactory performance, but could not complete the course due to special circumstances. The class credits and grade will not be used in the cumulative GPA calculation.
W: Withdrawal - Authorization to drop a course before the end of eighth week. The class credits and grade will not be used in the cumulative GPA calculation.
AU: Audit – Students was enrolled on a non-credit basis. A Non-Credit course has zero credits and the grade does not count towards the cumulative GPA calculation.
CR: Credit by examination - Credit = grade "C" or better
TR: Transfer credit – Only the credits are transferred. The grade is not transferred.
NC: No Credit - Failure on challenge examination
P: Pass - Student passed the course which was offered on a pass/no-pass basis
NP: No pass - Performance is unsatisfactory of the course which was offered on a Pass/No pass basis.
IP: In progress - Performance is satisfactory, but a final grade is not yet assigned. This applies to work normally exceeding beyond one trimester
U: Unauthorized incomplete - The student did not withdraw from the course but failed to complete course requirements. For purposes of a grade point average, this symbol is equivalent to an "F"
RD: Report delayed - Indicates a grade has not yet been turned in by the instructor.
RP: Repeating the course; previous grade is replaced and will not count toward graduation credits or cumulative GPA.

Dean's Honors

Excellence in scholastic achievement is recognized each trimester by the compilation of a Dean's List. An undergraduate student successfully completing at least 12 credit hours with grade points, with a minimum term grade point average of 3.35 or better; a graduate student successfully completing at least 9 credit hours with grade points, with a minimum term grade point average of 3.85 or better, qualify for the Dean's Honor List. "Dean's Honor List" will also appear on the transcripts of students obtaining a 4.0 grade point average.

Incomplete Grades

In circumstances where a student is unable to complete the coursework required prior to the end of the trimester, the student may, with the instructor's approval, file a

petition to receive a grade of Incomplete. Incomplete grades will be indicated by a mark of "I" on the student's grade report and transcript until the student either successfully completes the course requirements (at which time the "I" will be changed to a letter grade) or fails to complete the course requirements (at which time the "I" will be changed to an "F").

An incomplete will not have class credit and grade count towards the cumulative GPA calculation in the trimester in which is given. Students have two trimesters, following the trimester for which an incomplete is given, to successfully complete any deficient coursework. The trimester extends to the last day of scheduled final examinations. Failure to complete all work within this time period will result in the student receiving a failing grade for the course.

Auditing Courses

Students who wish to take courses without formally enrolling in a degree program may do so on an audit basis. Students who wish to audit courses must:

A) File an Application for Admission and pay the admission fee (if not currently enrolled);
B) Demonstrate proficiency in English;
C) Pay applicable tuition; and
D) Meet attendance and other requirements as specified by the instructor.

A course which is audited will be indicated by an "AU" on the student's transcript.

Changing Programs

The program change does not affect the cumulative GPA. The cumulated GPA in the new program will be the same as the old program. Students can change their declared academic program of study at any time. To make a program change, the student should complete the Change Major/Program form at the Registrar's office. The student should meet with the designated Program Director for an interview and discussion of qualifications and goals. The student's credentials will be assessed to determine the proper classes for the new degree requirements. The specific requirements for changing the major depend on the number of credit hours the student has completed and the requirements of the intended major. Transfer credits approved for the prior degree program will be reassessed to determine the eligibility of transfer to the new degree program. Credits that are transferred during the reassessment do not have the grade transferred.

ACADEMIC PROGRESS

A student's progress through the program is based on successful completion of expected competencies.

The faculty determines if the student has demonstrated the knowledge, skills, and approach necessary to be eligible to progress to the next phase. In special instances, the faculty may convene outside of class time to consider cases relating to unusual circumstances, such as probationary or dismissal cases.

Standards of Satisfactory Progress

All students must maintain Satisfactory Academic Progress (SAP) over the course of their study at SVU. Students will undergo SAP evaluations several times during their attendance at SVU. SAP evaluations will be based upon the following criteria:

A) Every trimester, the student must maintain a cumulative GPA of 2.0 or above for undergraduate students, or 3.0 or above for graduate students.
B) After each academic year, the student's course completion percentage must be at or above 70%. Also, the student must maintain a cumulative GPA of 2.0 for undergraduate students or 3.0 for graduate students.
C) After attempting 50% of the normal program length, the student's course completion percentage must be at or above 70%. Also, the student must maintain a cumulative GPA of 2.0 for undergraduate students or 3.0 for graduate students.

Maximum program length is determined for each student at admission. Maximum program length is equal to the number of credit hours required for the student to complete the program times 1.5. The number of credits includes all transferred credits from institutions accredited by agencies recognized by the United States Department of Education.

Academic Warning

The instructor of the course where a student demonstrates unacceptable performance must notify the student of such performance as soon as it becomes evident. The student will be notified that continued poor academic performance can lead to academic probation and dismissal.

Students who do not meet the Standards of Academic Progress will be placed on probation. The duration and conditions of the probationary period will be determined on an individual basis by the Academic Review Committee. The Committee may recommend remedial study and/or repetition of a unit of study.

The "D" or "U" grade and credit would have been used in the cumulative GPA calculation.

Academic Probation

Should a student fail to meet the requirements set by the SAP evaluation, they will be placed on Academic Probation. Academic Probation is defined as a period of time in which a student will be kept under strict scrutiny by an academic advisor to determine if they are able to meet SVU academic requirements to remain in good standing with the university. Failure to satisfactorily complete academic probation will result in disqualification from SVU.

If a student fails to meet SAP, the following procedures must be followed:

A) Students will receive an email notice informing them that they have been placed on Academic Probation.
B) Within two weeks of receiving the email notice, students will be required to meet with an advisor to discuss their probation. Failure to do so will prevent a student from registering for classes.
C) Prior to meeting with the advisor, students must pick up the Academic Probation Letter, Academic Probation Advising Form, and unofficial transcript from the Student Office.
D) At the advising session, students will be instructed on what actions they must take to clear their probation status.

The Academic Probation period is two trimesters from the trimester in which the student was placed on Academic Probation. During the probation study plan, the student will be allowed to take maximum 3 classes for the graduate programs or maximum 4 classes for undergraduate programs.

After the Academic Probation period, the student must meet the SAP Evaluation criteria or the student will be subject to dismissal.

Dismissal

A student may be subject to dismissal from the program for substandard academic or professional performance, as follows:

A) A final grade of "F" in any course;
B) Any event that could result in either academic or professional probation for a student currently on academic or professional probation;
C) Violation of the terms of probation;
D) Repeated tardiness at program-scheduled activities and in meeting deadlines set by the faculty in regards to tests and/or assignments; and/or
E) Failing to complete the required procedures for either Voluntary Withdrawal or Leave of Absence from the university.

Withdraw

Application for voluntary withdrawal from the university must be made in writing to the Academic Dean. Except in special cases, the application will be accompanied by a personal interview. Every effort should be made to assure that no misunderstanding or errors occur in the withdrawal process. Students, who leave the University without notifying the Office of the Registrar and not completing the withdrawal procedures within 30 days, will automatically be dismissed from the university. In addition, students must report to the Student Office to sign a withdrawal form before they can officially withdraw from the university. Students who do not complete this procedure will not be considered for readmission at a later date.

Readmission for students withdrawing in good standing is not assured unless it is part of the final agreement made between the Academic Dean and the withdrawing student. This final agreement must be in writing so that it is clear to all parties involved. Students who have not withdrawn in good standing may request readmission through the university's admissions application process. The Admissions Committee will evaluate the student's entire academic record and make a recommendation to the Academic Dean.

Leave of Absence

A student in good academic standing may request a leave of absence with the occurrence of a medical problem, serious personal problems or pregnancy.

Students requesting a leave of absence must apply in writing to the Academic Dean. In the event of a medical problem, a letter from a physician describing the condition for which the leave is requested and the estimated length of time needed for recovery must accompany the request.

After consultation with the student, the Academic Dean will decide whether or not the leave is to be granted and the conditions under which the student may return to school. A student requesting a leave of absence during, or at the end of, the academic year must complete the following:

A) Written request for a leave of absence;
B) A leave of absence form from the Registrar. After completing the student's portion, take the form to the faculty advisor who will consult with the student, sign the form, and write a conference report for the Academic Dean's use in considering the approval for leave;

C) A personal meeting with the Academic Dean to discuss the reason for the leave; and
D) Official exit interview with the Academic Dean, the Program Administrator, and Registrar.

When all of the above have signed the form, the Registrar will again sign the form and date it, indicating final approval. At this time, the Academic Dean or designee will send an official letter to the student indicating that the leave of absence has been approved and specifying the terms of the leave.

If the leave of absence is approved, the official date of the leave of absence will be the original date of receipt of the student's request and any tuition charged will be in accordance with the institution's refund policy. Leave of absence requested for a full academic year may be for one year only with expected reinstatement scheduled at registration for the following year. Leave of absence requested after registration for any given academic year may be granted for a period not to exceed the number of months remaining until the registration date for the next academic year.

It is the student's responsibility to keep the Registrar informed of any change of address while on a leave of absence.

EDUCATIONAL RECORDS

The Family Educational Rights Act grants students significant rights of access to their records. This Act also protects the privacy of the student records and requires the University to inform students of all their rights and safeguards. The following explains the various sections of the Act.

Students may gain access to any written records directly concerning them by asking the official (the Registrar) holding the records. Where a record contains information on more than one student, students requesting inspection must be informed about the information pertaining to them. The student does not have the right to inspect personally such records, as this would violate the privacy of another student.
There are some records to which the student has no access. These are: (1) financial records of parents; (2) confidential letters and recommendations written prior to January 1, 1975; (3) confidential letters and recommendations for which a waiver of rights to access has been assigned, provided the student is given the names of those writing letters (there are three areas in which a waiver may be signed - admissions, employment, and honors); and (4) doctors' and psychiatrists' records - which, however, may be reviewed by the students' own physicians.

Students have the right to the interpretation and explanation of all records subject to review. Furthermore, the subject matter of the files can be challenged directly with the official holding them. If students are not satisfied with the explanation or reach an impasse with the record holder, they have the right to appeal the case to the Academic Dean, who has been designated as the hearing officer.

In addition, students have the right to copies of their records. The student may, however, be charged for this service, but the amount cannot exceed the actual cost of producing them.

The Act also entitles students to the privacy of their records. Only material classified as "directory" information can be released without student consent. Directory information, as defined by SVU, includes the student's name, address, telephone number, school of enrollment, periods of enrollment, degree awarded and honors, field of study, and date or place of birth. With reasonable notice, students can have any or all of the information withheld.

However, the Act does allow persons serving in official capacities to have access to student records. These include: (1) University officials who have a legitimate interest, i.e., those performing their official duties; (2) officials of other universities in which the student seeks enrollment, provided the student is given notice and the opportunity to review the records sought; (3) Government officials acting in their legitimate functions; (4) those persons needing them in connection with a student's application for, or receipt of, financial aid; (5) organizations conducting surveys, provided that the information will not reveal the students name, and when the information is no longer necessary it will be destroyed; (6) accrediting organizations; and (7) those persons named in a judicial order.

Students may consent to have others review their files. To protect students, a record will be kept of those granted access, other than SVU officials. Such records will be maintained for each file reviewed.

Student permanent records are maintained on-site for a minimum of five (5) years in a secure fire-proof cabinet, and transcripts are kept permanently.

STUDENT SERVICES

The university seeks to enrich the quality of student life by providing a variety of academic and non-academic counseling, referral, professional development, recreational, and social opportunities through the Office of Student Affairs.

Academic Counseling

For students who want additional instruction, the Student Office has established the "SVU Student Learning Center," which can help students arrange either private or small group tutorial sessions.

The Student Learning Center offers more informal counseling sessions. It is to help students do well on their class work. At the same time, it also helps students identify and pursue their career goals, providing advice and suggestions on non-classroom aspects of the academic process including realistic career recognition and selection, time and workload management, stress reduction and strategies for dealing with academic fatigue or burnout.

Non-Academic Counseling and Referrals

Recognizing that life in general, and academic life in particular, is filled with complexity and confusion, the Student Office provides a wide array of counseling and referral services designed to assist students with their non-academic concerns, including conflict resolution, as well as referrals to housing services, health services and legal services.

Professional Development

To assist students in locating and securing employment opportunities, the Student Office offers several workshops designed to cultivate students' professional development, including, resume reviewing, interview coaching, and an employment bulletin service.

Recreational and Social Opportunities

The university seeks to foster a sense of community among the members of the university by encouraging social interactions and experiences. The university primarily pursues this goal through two university-sponsored organizations: The Student Association and the Alumni Association.

Student Association and Alumni Association

The Student Association and Alumni Association seek to encourage the development of university community by organizing and providing recreational and social opportunities designed to unite students by introducing them socially to one another and to enrich their academic experience by providing access to local cultural and recreational venues.

Housing

The university does not have any dormitory facilities, and SVU does not provide assistance students with finding housing. However, housing near the university is not difficult to find. Rent for one bedroom apartment in the vicinity of the university currently averages about $2,000 per month. Some of our students have found housing by renting rooms in private residences. Rooms typically range from $550 to $800 per month, and usually include full privileges for the kitchen, laundry, living room and other common areas of the residence.

Student Financial Assistance

Silicon Valley University does not participate in federal and state financial aid programs. However, there are some available positions of on-campus jobs available every trimester. Office Assistant, Teaching Assistant/Grader, Tutor, and Library Assistant positions are available to qualified undergraduate or graduate level students. Selection will be based on academic achievements, course requirements, and prior experiences, as well as the school's current budget availability during each trimester.

If a student obtains a loan to pay for an educational program, the student will have the responsibility to repay the full amount of the loan plus interest, less the amount of any refund. If in the future a SVU student receives federal student financial aid funds, the student is entitled to a refund of the moneys not paid from the federal student financial aid program funds.

Career Service

Individual job search assistance is available to students at no additional cost. However, Silicon Valley University cannot guarantee an employment in any particular job or salary range upon graduation.

UNIVERSITY POLICY ON ACADEMIC FREEDOM

Silicon Valley University is dedicated to the pursuit of truth and acquisition of knowledge through the unfettered opportunity to engage in research and intellectual exchange. Consequently, the university considers the following academic freedoms essential to the fulfillment of its mission:

A) The right to engage in scholarship and to form academic opinions;

B) The right to equal treatment under university policies and to equal access to university resources;
C) The right of access to course and degree requirements and expectations;
D) The right to objective analysis based solely on the quality of academic performance;
E) The right to an academic environment free of harassment and/or intimidation; and
F) The right to engage in free expression, subject only to reasonable regulation concerning time, place and manner.

UNIVERSITY STATEMENT ON STUDENTS' RIGHTS

The university considers the following rights to be inherent to the pursuit of academic excellence and intellectual enterprise. Consequently, the university endeavors to uphold and honor the following on behalf of its students:

A) The right to academic freedom;
B) The right to administrative integrity;
C) The right to an environment conducive to intellectual pursuit;
D) The right to equal access to university facilities and equal treatment under university policies;
E) The right to petition for redress of grievances against other individuals or the university; and
F) The right to privacy and confidentiality of personal and academic records as provided by law.

UNIVERSITY STATEMENT ON STUDENTS' OBLIGATIONS

The university considers the following standards of conduct to be inherent in its mission of providing an environment of academic excellence and free academic exchange. Students violating these standards are acting in contravention to their basic obligation to maintain and uphold the university's fundamental mission and may therefore be subject to official sanction.

At all times, students are under the obligation to uphold and maintain:

The Principle of Academic Integrity

All students are expected and required to show the highest respect for the principle of academic honesty concerning all information provided to the university and in all academic performance undertaken while subject to the university's oversight. At a minimum, demonstrated respect for the principle of integrity requires the student at all times to:

A) Act with complete candor in furnishing the university with required information; and
B) Act with complete honesty while engaged in intellectual inquiry, refraining at all times from the commission of plagiarism, fraud, bribery or sabotage upon the university or upon any member or representative of the university community.

The Principle of Academic Community

All students are expected to act at all times with the deepest respect for the larger academic community of which he or she is a member. At a minimum, demonstrated respect for the principle of academic community requires that the student refrain at all times from engaging in:

A) Harassment of students or other members of the university community;
B) Hazing, belittlement, oppression or intimidation of students or other members of the university community;
C) Misuse, destruction, sabotage or improper conversion of university property or the personal property or work product of others;
D) Possession on campus of firearms, dangerous chemicals, explosives or other dangerous or proscribed substances or articles;
E) Objectionable behavior, including the failure to adhere to official or reasonable requests made by authorized members of the university community or the disruption or impairment of university functions or programs or other students' rights to an intellectual environment conducive to academic performance; and
F) Criminal conduct which affects the university or adversely affects the participation or suitability of the student as a continuing member of the university community.

The Principle of Academic Effort

All students are expected to act with respect for themselves and for the academic pursuits in which they are engaged. At a minimum, demonstrated respect for the principle of academic effort requires that the student:

A) Maintain at all times the minimum grade point average (GPA) required for successful performance in the student's particular field of study; and
B) Maintain at all times the minimum attendance requirement and all applicable deadlines for all courses and projects in the student's particular field of study.

Change of Grade

A change of grade may be made only in the case of a declared clerical or other administrative error, except as

indicated below. The definition of a clerical error is an error made by the instructor or by an assistant in calculating or recording the grade.

An appeal with the Grade Examination Application form for a change of grade must be initiated by the student and must first be approved by the instructor and the Academic Dean. The instructor must also submit the Grade Change form to be approved by the Academic Dean before it can be accepted by the Student Office. An appeal for a change of grade must be initiated as soon as possible, within two trimesters following the trimester that the incorrect grade was assigned, in order to insure that proper documentation is available. The grade will not change until the conclusion of the appeal process is finished. When new grade is issued, old grade will be removed. Only new grade will count toward GPA calculation.

NON-DISCRIMINATION POLICY

Silicon Valley University is an equal opportunity institution of higher learning that does not discriminate on the basis of race, color, religion, national origin, age, sex, sexual orientation, disability or handicap, disabled veteran's, or Vietnam era veteran's status. This policy applies to all employment practices, admission of students, educational programs and activities.

UNIVERSITY POLICY ON SEXUAL AND DISCRIMINATORY HARASSMENT

Silicon Valley University is committed to the fostering of an atmosphere of uncompromising academic excellence and unfettered academic inquiry. Subversion of these standards through the harassment of students is in contradiction to the university's fundamental mission and such harassment is therefore absolutely prohibited.

Sexual Assault

Assault is defined as the unprivileged, non-consensual touching of another person in any manner which would prove offensive to a reasonable person. Students and university personnel are strongly encouraged to immediately report any instances of assault to both university administration and appropriate law enforcement agencies.

Sexual Harassment

Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors and other verbal, nonverbal or physical conduct of a sexual nature directed at any member of the campus community by any other member of the community, whether student, faculty, administrator or other university employee, resulting in unreasonable interference with an individual's enjoyment of the university environment and/or with the performance of his or her academic or employment duties.

Any harassment, threat or offer by any employee of the university to condition any aspect of a student's academic performance, reputation or standing upon the provision of sexual favors is prohibited.

Any other harassment of any member of the campus community resulting in the creation of an offensive, intimidating or hostile environment is similarly prohibited.

Discrimination

Discriminatory harassment is defined as intimidation through the use of personal vilification and/or physical violence based upon an individual's race, gender, creed, religion, disability, national or ethnic origin, marital status or sexual orientation. Speech or other conduct constitutes personal vilification if it is: A) intended to intimidate or stigmatize a specific individual or group of individuals on the basis of any of the preceding categories; B) is addressed directly to the individuals whom it insults or stigmatizes; and C) makes use of "fighting" words or nonverbal symbols. Fighting words or nonverbal symbols are those which are inherently provocative and inflammatory such that they inflict injury by their very expression or tend to incite an immediate breach of peace.

Students with questions regarding the university's policies on sexual or discriminatory harassment or with any complaints concerning possible instances of sexual or discriminatory harassment should contact the appropriate university administrator.

GRIEVANCE PROCEDURE FOR STUDENTS

Disciplinary Action

Investigations into allegations of misconduct or other violations of official university policy are subject to a judicial hearing presided over by a judicial board or a judicial officer as appointed by the university president. Allegations of misconduct which are deemed to be supported by a preponderance of the evidence presented during the hearing may result in the imposition of judicial sanction. Allegations of misconduct which are violations of local, state or federal statute may also result in formal criminal or civil proceedings.

Judicial Hearings

Upon the credible presentation of an allegation of misconduct, the president of the university will appoint, according to his or her discretion and the dictates of fairness and justice, a judicial officer or a judicial panel

consisting of interested members of the university community having the wisdom and temperament necessary for conducting a fair hearing and rendering a fair decision. Upon appointment, the judicial officer or panel will convene a judicial hearing to examine the circumstances surrounding any of the following situations:

A) Allegations of student misconduct;
B) Allegations of administrative misconduct;
C) Allegations of faculty misconduct;
D) Allegations of student-student harassment;
E) Allegations of sexual or discriminatory harassment;
F) Allegations of observed misconduct (third-party accuser).

Upon the convention of a hearing, the student or other party accused of misconduct shall possess, subject to the dictates of all relevant law and the dictates of fairness and justice, the following rights:

A) The right to be present during the hearing;
B) The right to confront accuser and witnesses;
C) The right to examine and challenge evidence;
D) The right to appoint an advocate to argue on one's behalf; and
E) The right to present evidence and call witnesses on one's own behalf.

At the conclusion of the hearing, the judicial officer or panel will rule whether a preponderance of the evidence presented during the hearing supports the allegation of misconduct. If the evidence fails to support the allegation, the party accused of misconduct is exonerated and will not be subject to further sanctions. No record of the accusation shall be placed in the student or personnel file of the accused party. If the evidence is deemed sufficient to support the allegation, the judicial officer or panel shall choose an appropriate sanction as determined by the nature and seriousness of the offense.

Should the student or other party accused of misconduct object to:

A) The judicial officer or the composition of the judicial panel;
B) The preservation of his or her rights during the hearing; or
C) The fairness of the final judgment

A petition of appeal specifically detailing the appellant's objections may be made directly to the president of the university, who shall approve or deny the petition based on the substance of the allegations. Should the petition be approved, the president may order a reconstitution of the judicial panel or a rehearing, as required by the dictates of justice and fairness.

If a student is dissatisfied with the treatment under the university's judicial system, a complaint can be made to the following organizations:

Bureau for Private Postsecondary Education (BPPE)
P.O. Box 980818
West Sacramento, CA 95798-0818
2535 Capitol Oaks Drive, Suite 400
Sacramento, CA 95833
(916) 431-6959
(888) 370-7589
Web site: www.bppe.ca.gov
E-mail: bppe@dca.ca.gov

Accrediting Council for Independent Colleges and Schools (ACICS)
750 First Street, NE, Suite 980
Washington, DC 20002-4241
(202) 336-6780

Judicial Sanction

Upon the determination that an allegation of student misconduct is supported by a preponderance of submitted evidence, the judicial board or judicial officer may sanction the offending student in a manner consistent with the seriousness of the offense and consonant with the range of judicial sanctions permitted by the university:

A) Disciplinary probation. No permanent record of the misconduct will be placed in the student file. However, a repeated violation may result in imposition of more serious sanctions.
B) Written reprimand. A written account of the incident to be placed in the student's file and made available to others consistent with applicable law. The student thereafter is ineligible to hold office or other leadership positions in campus organizations.
C) Educational sanction. The student is required to undertake a specified program or course of study within a determined time frame. Failure to successfully complete the program may result in the imposition of more serious sanctions.
D) Loss of privileges. Restriction or prohibition on use of or access to selected university facilities or resources.
E) Restitution. Repayment of monetary damages incurred by the university as a result of misconduct, or requirement of equivalent compensatory service to either the university or a university-designated community organization.
F) Interim suspension. The student placed on interim suspension will be required, as a matter of public safety or for the good of the academic community, to leave the university pending the final judgment of a judicial hearing.
G) Academic probation. The student placed on probation must meet specified academic

requirement(s) within a determined time frame to maintain continued eligibility for and participation in university programs.

H) Academic suspension. The student placed on suspension will be required to leave the university for a determined period of time, after which application for readmission may be made.

I) Academic expulsion. The student placed under expulsion will be required to permanently leave the university and may not, except under exceptional circumstances to be determined by the president or his or her designees, apply for readmission.

J) Criminal or civil complaint. Misconduct of a particularly egregious nature may result in the university seeking formal legal redress under applicable law within the court of law relevant to the offense.

GRADUATION REQUIREMENTS

General University Requirements

Students seeking a degree from Silicon Valley University must complete specific requirements as determined by the faculty, the Board of Trustees and the State of California.
The requirements for graduation include all of the following:

A) Completion of minimum number of credit hours;
B) Meet the minimum cumulative GPA requirement for graduation; 2.0 for undergraduate students and 3.0 for graduate students out of 4.0 grading scale.
C) Faculty approval;
D) Filing of petition for graduation
E) Administrative clearance

Bulletin Requirements

A student's graduation requirements are dictated by the terms of the catalog applicable to the trimester in which the student enrolls in the university as a degree seeking student. Students who exit the university for a full trimester or longer and choose to return to SVU are subject to the terms of the catalog in effect at the time of reentry. Students may change the terms of their graduation requirements according to the catalog currently in effect by filing a petition and paying a fee. Should courses required for graduation at the time of a student's entry be discontinued, the university will designate courses to serve as effective substitutions.

Minimum Number of Credit Hours

Students must complete an appropriate number and distribution of credit hours to earn a degree.

Unit of credit per clock hour: SVU utilizes the trimester system. Each class is assigned a specific number of credits according to the lecture or lab hours spent. For lab sessions, 1 credit hour equals 15 lecture hours, a total of 30 lab hours. One class hour of teaching or 1 unit of credit hour is 60 minutes in length for each week of a 15-week trimester. Class sessions should equal credit hours multiplied by 60 minutes each week. For example, a 3 credit hour course should meet for a period of 180 minutes each week. In addition, students are expected to have 6 hours of study workload outside the lecture per week. Students earn 3 credits after successfully completing the course work for 15 weeks.

- Bachelor of Science in Computer Science (BSCS) 128 credit hours
- Bachelor of Science in Computer Engineering (BSCE) 128 credit hours
- Bachelor of Business Administration (BBA) 128 credit hours
- Master of Science in Computer Science (MSCS) 36 credit hours
- Master of Science in Computer Engineering (MSCE) 36 credit hours
- Master of Business Administration (MBA) 36 credit hours

Credit hour earned through lab session does not apply.

Certificate Programs

Computer Network and Telecommunications Engineering 525 hours
Database Design and Software Engineering 525 hours
English as a Second Language 240 to 720 hours

Checklist of Requirements

A) Successful completion of all coursework listed in the study plan.
B) GPA (Grade Point Average) of 2.0 or above for undergraduate students, and 3.0 or above for graduate students.
C) All tuition and fees must be paid.
D) Application for graduation and graduation fees are paid.
E) Satisfactory completion of English Proficiency.

Faculty Approval

To graduate, students must demonstrate that they have conducted themselves in a professional and ethical manner according to the standards of student conduct throughout their course of study at the university. Students subject to unresolved allegations or pending discipline concerning breaches of student obligation or university policy may be denied approval for graduation

until such time as pending allegations or disciplinary actions against the student are resolved.

Petition to Graduate

Upon registering for the final trimester of study, or at any time within the trimester proceeding the last trimester, a student intending to graduate upon the completion of that trimester must file a petition for graduation with the registrar and pay the required graduation fee. Upon receipt of the petition, the Registrar will prepare a deficiency declaration outlining any remaining courses and other obligations needed to successfully accomplish the student's program of study. It is important that the student successfully address any deficiencies before the end of the last trimester. The petition will be either approved or disapproved depending on the student's success in resolving any deficiencies in the last trimester.

Estimated deadlines for filing the application are:

Fall Trimester	November	1
Spring Trimester	March	1
Summer Trimester	July	1

A fee of $275 is required. Please also check SVU website and/or announcement boards for any changes to the deadlines.

Administrative Clearance

To obtain approval to graduate, a student must clear any outstanding debts owed to the university. Failure to do so will result in the denial of a student's petition to graduate for as long as a balance owed to the university remains outstanding.

Definitions of Subject Acronyms

BA: Business Administration
CE: Computer Engineering
CS: Computer Science
ECON: Economics
EN: Environmental Studies/ Environmental Science
ENGL: English
ESL: English as a Second Language
MATH: Mathematics
PHYS: Physics
POLS: Political Science
PSYCH: Psychology

Lower Division: Undergraduate classes of 100 and 200 series
Upper Division: Undergraduate classes of 300 and 400 series
Upper Division Standing: Student has completed the minimum requirements in lower division courses
Graduate Division: Graduate level classes of 500 and 600 series
Graduate Standing: Student has been admitted to graduate program

UNDERGRADUATE PROGRAMS

SVU offers several general education classes. However, students may have to take general education and lower division courses at other accredited schools (i.e. community colleges) before applying for an undergraduate degree program. General Education and lower division classes that are not offered at SVU must be taken at other accredited schools in order to meet the program requirements.

Bachelor of Science in Computer Science (BSCS)

Program objective: This program is designed to prepare students for a variety of careers in the Computer Science field by providing a solid foundation of theoretical background and practical experience in the different fields currently available. Students will master the fundamental knowledge of computer architectures, computer algorithms, computing theory, database, operating systems, computer programming languages, communication and networks.

Required credits: The BSCS program requires coursework in the following areas with a minimum of 128 credits required:

- Lower Division 75 credits
  - General Education 63 credits
  - Computer Science Basics 12 credits
- Upper Division 53 credits
  - Computer Science Core 39 credits
  - Electives 14 credits

Lower-Division Curriculum (Minimum 75 credit hours)

A minimum of 75 lower division credit hours is required, with a minimum of 63 credit hours in General Education courses and 12 credit hours in Computer Science basics:

General Education (Minimum 63 credit hours)

Area A
Basic Subjects 9 credits
As a requirement of Area A, each student must complete:

ENGL100	English Composition
ENGL130	Fundamentals of Intercultural Communications
ENGL200	Critical Thinking

Area B
Mathematics & Science Core 45 credits
As a requirement of Area B, each student must complete:

I. Mathematics 18 credits

MATH200	Calculus I
MATH202	Calculus II
MATH204	Calculus III
MATH206	Discrete Mathematics
MATH210	Introduction to Probability Theory
MATH212	Introduction to Statistical Methods

II. Natural Science 12 credits

EN200	Energy and Environment
PHYS200	College Physics I
PHYS202	College Physics II
EN220	Introduction to Environmental Science

III. Social Science 15 credits

ECON100	Principles of Economics: Macroeconomics
POLS100	U.S. History
PSYCH100	General Psychology
POLS150	American Government
ECON200	Principles of Economics: Microeconomics

Area C
Humanities and Communication 9 credits
As a requirement of Area C, each student must complete:

ENGL220	Technical Writing
ENGL230	Professional Communication I
ENGL232	Professional Communication II

Computer Science Basics (Minimum 12 credit hours)

CS200	Introduction to Computer Science	3 credits
CS200L	Computer Science Introduction Lab	1 credit
CS206	Introduction to UNIX/Linux	3 credits
CS206L	UNIX/Linux Introduction Lab	1 credit
CS230	Programming in C++	3 credits
CS230L	C++ Programming Lab	1 credit

Upper- Division Curriculum (Minimum 53 credit hours)

Computer Science Core (Minimum 39 credit hours)

CS300	Data Structure	3 credits
CS300L	Data Structure Lab	1 credit
CS332	Programming in Java	3 credits
CS332L	Java Programming Lab	1 credit
CE352	Introduction to Logic Design	3 credits
CE352L	Logic Design Lab	1 credit
CS400	Operating Systems	3 credits
CS400L	Operating Systems Lab	1 credit
CS402	Programming Languages	3 credits
CS404	Compilers	3 credits
CS420	Introduction to Database Systems	3 credits
CS440	Computer Networks I	3 credits
CE450	Computer Architecture I	3 credits
CE454	Microprocessor Design	3 credits
CE454L	Microprocessor Design Lab	1 credit
CE460	Introduction to Embedded Systems	3 credits
CE460L	Introduction to Embedded Systems Lab	1 credit

Electives (Minimum 14 credit hours)

Any courses at the 300-400 level or above at SVU in Computer Science or Computer Engineering.

Bachelor of Science in Computer Engineering (BSCE)

Program objective: The BSCE program is designed to provide a basic background in computer science and engineering. The major emphasis is on design of computer hardware, including design of the software required by the computer to function, as well as the software tools required by software applications.

Required credits: The BSCE program requires coursework in the following areas with a minimum of 128 credits required:

- Lower Division 78 credits
  - General Education 66 credits
  - Computer Science Basics 12 credits
- Upper Division 50 credits
  - Computer Engineering Core 40 credits
  - Electives 10 credits

Lower- Division Curriculum (Minimum 78 credit hours)

A minimum of 78 lower division credit hours is required, with a minimum of 66 credit hours in General Education courses and 12 credit hours in Computer Science basics:

General Education (Minimum 66 credit hours)

Area A

Basic Subjects 9 credits

As a requirement of Area A, each student must complete:

ENGL100	English Composition
ENGL130	Fundamentals of Intercultural Communications
ENGL200	Critical Thinking

Area B

Mathematics & Science Core 48 credits

As a requirement of Area B, each student must complete:

I. Mathematics 21 credits

MATH200	Calculus I
MATH202	Calculus II
MATH204	Calculus III
MATH206	Discrete Mathematics
MATH210	Introduction to Probability Theory
MATH212	Introduction to Statistical Methods
MATH214	Differential Equations

II. Natural Science 12 credits

EN200	Energy and Environment
PHYS200	College Physics I
PHYS202	College Physics II
EN220	Introduction to Environmental Science

III. Social Science 15 credits

ECON100	Principles of Economics: Macroeconomics
POLS100	U.S. History
PSYCH100	General Psychology
POLS150	American Government
ECON200	Principles of Economics: Microeconomics

Area C

Humanities and Communication 9 credits

As a requirement of Area C, each student must complete:

ENGL220	Technical Writing
ENGL230	Professional Communication I
ENGL232	Professional Communication II

Computer Science Basics (Minimum 12 credit hours)

CS200	Introduction to Computer Science	3 credits
CS200L	Computer Science Introduction Lab	1 credit
CS206	Introduction to UNIX/Linux	3 credits
CS206L	UNIX/Linux Introduction Lab	1 credit
CS230	Programming in C++	3 credits
CS230L	C++ Programming Lab	1 credit

Upper-Division Curriculum (Minimum 50 credit hours)

Computer Engineering Core (Minimum 40 credit hours)

CS300	Data Structure	3 credits
CS300L	Data Structure Lab	1 credit
CE350	Circuit Theory	3 credits
CE352	Introduction to Logic Design	3 credits
CE352L	Logic Design Lab	1 credit
CE353	Introduction to Digital Electronic	3 credits
CE353L	Digital Electronic Lab	1 credit
CS400	Operating Systems	3 credits
CS400L	Operating Systems Lab	1 credit
CS440	Computer Networks I	3 credits
CE450	Computer Architecture I	3 credits
CE452	Advanced Logic Design	3 credits
CE452L	Advanced Logic Design Lab	1 credit
CE454	Microprocessor Design	3 credits
CE454L	Microprocessor Design Lab	1 credit
CE456	Fundamentals of VLSI Design	3 credits
CE460	Introduction to Embedded Systems	3 credits
CE460L	Introduction to Embedded Systems Lab	1 credit

Electives (Minimum 10 credit hours)

Any courses at the 300-400 level or above in Computer Engineering or Computer Science at SVU.

Bachelor of Business Administration (BBA)

Program objective: The BBA program is designed to provide students the fundamentals of current business functions, management principles as well as modern information technology as applied in a real-world business environment.

Required credits: The BBA program requires coursework in the following areas with a minimum of 128 credit hours required:

- Lower Division 58 credits
  - General Education 58 credits
- Upper Division 70 credits
  - Core Courses 56 credits
  - Electives 14 credits

Lower-Division Curriculum (Minimum 58 credit hours)

All students must complete at least 58 credit hours in general education courses with at least 12 credit hours in Basic Subjects, 37 credit hours in Mathematics and Science Core, and 9 credit hours in Humanities and Communications.

Area A

Basic Subjects 12 credits

As a requirement of Area A, each student must complete:

ENGL100	English Composition
MATH110	Mathematical Analysis
ENGL130	Fundamentals of Intercultural Communications
ENGL200	Critical Thinking

Area B

Mathematics & Science Core 37 credits

As a requirement of Area B, each student must complete:

I. Mathematics 12 credits

MATH200	Calculus I
MATH202	Calculus II
MATH210	Introduction to Probability Theory
MATH212	Introduction to Statistical Methods

II. Natural Science 10 credits

CS200	Introduction to Computer Science
CS200L	Introduction to Computer Science Lab
EN200	Energy and Environment
EN220	Introduction to Environmental Science

III. Social Science 15 credits

ECON100	Principles of Economics: Macroeconomics
POLS100	U.S. History
PSYCH100	General Psychology
POLS150	American Government
ECON200	Principles of Economics: Microeconomics

Area C

Humanities and Communication 9 credits

As a requirement of Area C, each student must complete:

ENGL220	Technical Writing
ENGL230	Professional Communication I
ENGL232	Professional Communication II

Upper-Division Curriculum (Minimum 70 credit hours)

Business Administration Core (Minimum 56 credit hours)

BA300	Fundamentals of Accounting	3 credits
BA300L	Fundamentals of Accounting Lab	1 credit
BA301	Intermediate Accounting I	3 credits
BA301L	Intermediate Accounting Lab I	1 credit
BA302	Accounting for Management Decision Making	3 credits
BA302L	Accounting for Management Decision Making Lab	1 credit
BA320	Cash Management	3 credits
BA380	Introduction to Quantitative Methods in Business	3 credits
BA401	Intermediate Accounting II	3 credits
BA401L	Intermediate Accounting Lab II	1 credit
BA410	Enterprise Information Systems	3 credits
BA410L	Enterprise Information Systems Lab	1 credit

BA430	Financial Management	3 credits
BA431	Introduction to Corporate Finance	3 credits
BA432	Introduction to Investment Analysis	3 credits
BA433	Financial Reporting and Analysis	3 credits
BA440	Management Principles	3 credits
BA442	Human Resource Management	3 credits
BA452	Operations Management	3 credits
BA460	Marketing Management	3 credits
BA462	Consumer Behavior	3 credits
BA481	Business Law	3 credits

Electives (Minimum 14 credit hours)

The student must complete at least 14 credit hours of elective courses to meet the graduation requirements from both the lower-division 300 level courses and the upper-division 400 level courses curricula in a program.

Courses can be chosen from elective courses below:

BA352	Discovering Business	3 credits
BA354	Negotiation	3 credits
BA445	Organizational Theory and Behavior	3 credits
BA461	Business Communications	3 credits
BA463	Sales Management	3 credits
BA470	International Marketing	3 credits
BA496	Special Topics in Business Administration	3 credits
BA499	Independent Study	3 credits

GRADUATE PROGRAMS

SVU offers three graduate programs: Master of Science in Computer Science, Master of Science in Computer Engineering, and Master of Business Administration.

Master of Science in Computer Science (MSCS)

Program objective: The MSCS program provides students with a strong theoretical background and practical experience in keeping current with the high tech trends and state-of-the-art technologies in Silicon Valley. Special topics are offered to introduce the latest developments and issues in both academic research and industry application areas. State-of-the-art hardware equipment and software tools currently used by most companies in Silicon Valley are used in the class.

Undergraduate Preparation

Students who do not have a Bachelor's degree in Computer Science must demonstrate competency in the following areas:

Mathematics		**12 credits**
MATH200	Calculus I	3 credits
MATH202	Calculus II	3 credits
MATH206	Discrete Mathematics	3 credits
MATH210	Introduction to Probability Theory	3 credits
Computer Science		**49 credits**
CS200	Introduction to Computer Science	3 credits
CS200L	Computer Science Introduction Lab	1 credit
CS206	Introduction to UNIX/Linux	3 credits
CS206L	UNIX/Linux Introduction Lab	1 credit
CS230	Programming in C++	3 credits
CS230L	C++ Programming Lab	1 credit
CS300	Data Structures	3 credits
CS300L	Data Structures Lab	1 credit
CS332	Programming in Java	3 credits
CS332L	Java Programming Lab	1 credit
CS400	Operating Systems	3 credits
CS400L	Operating Systems Lab	1 credit
CS402	Programming Language	3 credits
CS404	Compilers	3 credits
CS420	Introduction to Database Systems	3 credits
CS430	Object-Oriented Programming	3 credits
CS430L	Object-Oriented Programming Lab	1 credit
CE452	Logic Design	3 credits
CE452L	Logic Design Lab	1 credit
CE454	Microprocessor Design	3 credits
CE454L	Microprocessor Design Lab	1 credit
CE460	Introduction to Embedded Systems	3 credits
CE460L	Introduction to Embedded Systems Lab	1 credit

Graduate Level Requirements **36 credit hours**

Required credits: All MSCS students must complete coursework in the following areas with a minimum of 36 credit hours required:

- Computer Science Graduate Core: 18 credits
- Electives: 18 credits

The details are shown in the table below.

Computer Science Graduate Core		**18 credits**
CS440M	Computer Networks I	3 credits
CE450M	Computer Architecture I	3 credits
CS500	Operating System Design	3 credits
CS502	Design & Analysis of Algorithms	3 credits
CS520	Database System Principles	3 credits
CS540	Computer Networks II	3 credits

Electives **Minimum 18 credits**

Students in the MSCS program may take any 400 level or above of Computer Engineering or Computer Science as electives. However, no more than four 400 level elective courses can count towards the minimum of 36 graduate credit hours for graduation.

Master of Science in Computer Engineering (MSCE)

Program objective: The MSCE program is designed to provide computer engineers and computer scientists with advanced level skills in all areas of computer engineering and offers several areas of specialization including: computer design, software engineering, microcomputers and embedded systems, computer vision and robotics, computer networks and multimedia.

Undergraduate Preparation

Students who do not have a Bachelor's degree in Computer Engineering must demonstrate competency in the following areas:

Mathematics		**15 credits**
MATH200	Calculus I	3 credits
MATH202	Calculus II	3 credits
MATH206	Discrete Mathematics	3 credits
MATH210	Introduction to Probability Theory	3 credits
MATH214	Differential Equations	3 credits
Natural Science		**6 credits**
PHYS200	College Physics I	3 credits
PHYS202	College Physics II	3 credits
Computer Engineering		**42 credits**
CS200	Introduction to Computer Science	3 credits
CS200L	Computer Science Introduction Lab	1 credit
CS206	Introduction to UNIX/Linux	3 credits
CS206L	UNIX/Linux Introduction Lab	1 credit
CS230	Programming in C++	3 credits
CS230L	C++ Programming Lab	1 credit
CS300	Data Structures	3 credits
CS300L	Data Structures Lab	1 credit
CE350	Circuit Theory	3 credits
CE353	Introduction to Digital Electronic	3 credits
CE353L	Digital Electronic Lab	1 credit
CS430	Object-Oriented Programming	3 credits
CS430L	Object-Oriented Programming Lab	1 credit
CE452	Advanced Logic Design	3 credits
CE452L	Advanced Logic Design Lab	1 credit
CE454	Microprocessor Design	3 credits
CE454L	Microprocessor Design Lab	1 credit
CE456	Fundamentals of VLSI Design	3 credits
CE460	Introduction to Embedded Systems	3 credits
CE460L	Introduction to Embedded Systems Lab	1 credit

Graduate Level Requirements **36 credit hours**

Required credits: All MSCE students must complete coursework in the following areas with a minimum of 36 credit hours required:

- Computer Engineering Graduate Core: 19 credits
- Electives: 17 credits

The details are shown in the table below.

Computer Engineering Graduate Core		**19 credits**
CS400M	Operating Systems	3 credits
CS400M-L	Operating Systems Lab	1 credit
CS440M	Computer Networks I	3 credits
CE450M	Computer Architecture I	3 credits
CS540	Computer Networks II	3 credits
CE550	Computer Architecture II	3 credits
CE570	IC Design	3 credits

Electives **Minimum 17 credits**

Students in the MSCE program may take any 400 level or above of Computer Engineering or Computer Science courses as electives. However, no more than four 400 level elective courses can count towards the minimum of 36 graduate credit hours for graduation.

Master of Business Administration (MBA)

Program objectives: The MBA program covers the essential subjects in Accounting, Economics, Finance, and Enterprise Resource Planning (ERP). These subjects provide the foundations for effective business management. The MBA program provides the students solid training with additional emphasis on entrepreneurship and globalization due to its proximity to Silicon Valley's vibrant startup culture and multinational corporations.

Undergraduate Preparation

Students who do not have a Bachelor's degree in Business Administration must demonstrate competency in the following areas:

Mathematics		**6 credits**
MATH210	Introduction to Probability Theory	3 credits
MATH212	Introduction to Statistical Methods	3 credits
Social Science		**6 credits**
ECON100	Principle of Economics: Macroeconomics	3 credits
ECON200	Principle of Economics: Microeconomics	3 credits
Computer Science		**4 credits**
CS200	Introduction to Computer Science	3 credits
CS200L	Computer Science Introduction Lab	1 credit
Business Administration		**21 credits**
BA300	Fundamentals of Accounting	3 credits
BA300L	Fundamentals of Accounting Lab	1 credit
BA301	Intermediate Accounting I	3 credits
BA301L	Intermediate Accounting I Lab	1 credit
BA380	Introduction to Quantitative Methods in Business	3 credits
BA410	Enterprise Information Systems	3 credits
BA410L	Enterprise Information Systems Lab	1 credit
BA496-002	MBA Preparatory: Quantitative Methods	3 credits
BA496-002	MBA Preparatory: Quantitative Methods	3 credits

Graduate Level Requirements 36 credit hours

Required credits: The MBA program requires students to compete at least 36 credit hours of graduate courses from the following:

- Core Courses: 18 credits
- Electives: 18 credits

The details are shown in the table below.

Business Administration Core		**18 credits**
BA430M	Financial Management	3 credits
BA442M	Human Resource Management	3 credits
BA452M	Operations Management	3 credits
BA500	Financial Accounting	3 credits
BA515	Enterprise Resource Planning	3 credits
BA585	Statistical Methods for Business Research	3 credits
Electives		**Minimum 18 credits**
Students in the MBA program may take any 400 level or above courses as electives to meet the requirement. However, no more than four 400 level elective courses can count towards the minimum of 36 graduate credit hours for graduation.		

DOCTORAL PROGRAM

Doctor of Computer Engineering (DCE)

Mission and Objectives

DCE Program Mission: The mission of the Doctoral Degree program offered by SVU is to provide students with solid fundamental knowledge, practical hands-on experiences and professional skills in their respective fields. This program is executed with the emphasis of combined fundamental and applied knowledge in course work along with a capstone research project relating to real-world applications.

DCE Program Objective: The DCE program awards a professional doctorate degree. It signifies the student has attained specialized and practical competence which qualifies the recipient for the opportunities and leadership responsibility beyond the master's degree level. The main objective of the DCE degree is to prepare graduates with advanced knowledge in engineering skills, applied engineering research capabilities in high tech industry, and competitive global business arena. The DCE program focuses largely on hardware and embedded systems, software and database systems, and applied research of selected areas of study.

DCE Program Admission Requirements

A) All applicants to the DCE degree program must hold either a Bachelor's or Master's degree or its equivalent from an accredited institution. The minimum GPA accepted for students entering the DCE program are: 2.75 for students entering the program with a Bachelor's degree, and 3.0 for students entering the program with a Master's degree.

B) Applicants are strongly encouraged to provide an official GRE score taken within the five years prior to applying to SVU. The GRE score is used as one of the admission conditions for SVU's admission committee to assess the student's likelihood of successfully completing the DCE studies.

C) All international applicants must show proof of financial resources adequate to provide for all expenses while attending SVU.

D) Applicants whose native language is not English must demonstrate their English proficiency by providing an official score report from the Test of English as a Foreign Language (TOEFL®), the International English Language Testing Systems (IELTS™), or Test of English for International Communication (TOEIC®).

E) Applicants who have earned a degree from an institute where the language of instruction is English, (e.g. U.S., United Kingdom, Australia, Canada and New Zealand) are exempt from submitting a TOEFL®, IELTS™, or TOEIC® score. These applicants may be required to have their English proficiency evaluated when they arrive on campus.

F) DCE students do not qualify for federal or state financial aid.

Transfer of Credits

The maximum number of credit hours that can be transferred is up to 18 semester credit hours of graduate level courses for the DCE program if student is transferred from other accredited institutions in the United States. The maximum number of credit hours that can be waived is up to 36 semester credit hours of graduate level courses for the DCE program if the student earned the Master's degree at SVU. No credit is awarded for professional work experience outside of SVU.

DCE Courses and Research Requirements

SVU's DCE program requires completion of at least 108 trimester credit hours of graduate courses beyond Bachelor's degree level, which includes:

i CS/CE Graduate Core Courses: 39 Credit Hours

All DCE graduate students must have successfully completed 39 or more credit hours in the selected core requirement area. The required core courses are listed as follows:

CS400M	Operating Systems	3 credit hours
CS400M-L	Operating Systems Lab	1 credit hour
CS404M	Compilers	3 credit hours
CS440M	Computer Networks I	3 credit hours
CE450M	Computer Architecture I	3 credit hours
CE454M	Microprocessor Design	3 credit hours
CE454M-L	Microprocessor Design Lab	1 credit hour
CE456M	Fundamentals of VLSI Design	3 credit hours
CE460M	Introduction to Embedded Systems	3 credit hours
CE460M-L	Introduction to Embedded Systems Lab	1 credit hour
CS500	Operating System Design	3 credit hours
CS502	Design and Analysis of Algorithms	3 credit hours
CS520	Database System Principles	3 credit hours
CS540	Computer Networks II	3 credit hours
CE550	Computer Architecture II	3 credit hours

ii CS/CE 400/500 Level Graduate Elective Courses: Minimum 18 Credit Hours

All DCE graduate students must have successfully completed 18 or more credit hours in 400/500 Master level CS/CE selected requirement area. The required CS/CE elective courses are listed as follows:

CS522	Database Administration	3 credit hours
CS524	Transaction Processing and Distributed Databases	3 credit hours
CS541	Internetworking with TCP/IP	3 credit hours
CS542	Network Management	3 credit hours
CS543	UNIX Network Programming	3 credit hours
CS544	Network Administration	3 credit hours
CE560	Embedded Computer Systems Design	3 credit hours
CS560	Software Engineering	3 credit hours
CS561	Software Design and Architecture	3 credit hours
CE562	Embedded Software Design	3 credit hours
CS562	Software Quality Assurance	3 credit hours
CE570	IC Design	3 credit hours
CE571	Computer Memory Design	3 credit hours
CE572	Embedded Hardware Design	3 credit hours
CE596-001	Digital Design with FPGA's	3 credit hours
CE596-004	ASIC CMOS Design	3 credit hours
CE596-005	IC Layout Design	3 credit hours
CE596-006	System On Chip (SoC) Design	3 credit hours
CE596-007	Real Time Computer System	3 credit hours
CE596-008	IC Placement & Routing Design	3 credit hours
CS596-011	Web Data Mining	3 credit hours

iii Business/Management 400/500 Level Focus Courses: 18 Credit Hours

All DCE graduate students must have successfully completed 18 or more credit hours in the selected Business and Management focus area. The Business and Management elective courses are listed as follows:

BA442M	Human Resource Management (HRM)	3 credit hours
BA452M	Operations Management (OM)	3 credit hours
BA481M	Business Law	3 credit hours
BA500	Financial Accounting	3 credit hours
BA515	Enterprise Resource Planning (ERP)	3 credit hours
BA568	Customer Relationship Management (CRM)	3 credit hours

iv DCE 600 Level Advanced Concentration Courses: Minimum 21 Credit Hours

All DCE graduate students can declare a concentration in one of the following areas: hardware & embedded systems, or software & database systems under the condition that they successfully complete 21 or more credit hours of advanced electives in the selected concentration area, including 3 credit hours of CE697 Research Seminar, a required course for all DCE candidates. The required concentration courses are listed as follows:

CS600	Advanced Operating Systems	3 credit hours
CS602	Advanced Design and Analysis of Algorithms	3 credit hours
CS620	Advanced Database System and Application	3 credit hours
CS621	Distributed and Parallel Database Systems	3 credit hours
CS622	Advanced Business Intelligence and Analytics	3 credit hours
CS640	Advanced Network System Development	3 credit hours
CE650	Advanced Computer Architecture	3 credit hours
CE651	Parallel Computer Architecture	3 credit hours
CS660	Advanced Software Engineering	3 credit hours
CE671	Advanced VLSI Physical Design	3 credit hours
CE672	Advanced ASIC Chip Synthesis	3 credit hours
CE697	Research Seminar	1 credit hour

(Research Seminar consists of 3 credit hours)

v Doctoral Research: 12 Credit Hours

After completing the required courses, the student must write a dissertation to document the findings and pass an oral examination to defend the dissertation. The thesis must be made available to all examiners one month prior to the examination. The oral defense shall consist of a presentation of the results of the thesis and the defense of findings under questioning by examiners. This

examination is open to all faculty members of SVU, but only members of the Doctoral Research Committee have voting rights. The Doctoral Research Committee will decide if the candidate will be awarded a degree of the Doctor of Computer Engineering.

It is strongly recommended that doctoral students find a thesis advisor before taking the comprehensive examination. After passing the comprehensive examination, doctoral students should have a thesis advisor before the beginning of the next trimester following the comprehensive examination.

The student and his/her thesis advisor will jointly develop a study plan for research in a particular area. The plan must be filed with the Graduate Academic Dean's Office and approved by the student's Doctoral Research Committee.

The required doctorial research courses are listed as follows:

CE698	Doctoral Research I	6 credit hours
CE699	Doctoral Research II	6 credit hours

Graduation Requirements

The DCE degree requires a minimum of 108 trimester credit hours of graduate courses beyond Bachelor's degree, including doctoral research. These credit hours must satisfy the following requirements:

- Completion of 96 credit hours of DCE graduate level courses plus 12 credit hours of doctoral research upon approval by the thesis advisor.

- Overall GPA must be 3.3 or higher.

GPA of 3.0 or higher is required for every trimester during the entire tenure of study. In addition, a grade of "B-" or better is required in all courses and in concentration areas.

Residency Requirements

Fulfill minimum of 3 years residency requirements.

The doctoral degree is awarded based on achievement rather than accumulation of credit hours. However, the candidate is expected to complete a minimum of 70 credit hours of graduate courses beyond the Master's degree. Of these, 58 credit hours may be earned through coursework, and 12 credit hours through the doctoral research project. If the candidate did not earn a Master's degree at SVU, 18 credit hours of graduate level course work may be transferred from other accredited institutions at the discretion of the student's advisor.

DCE students must undertake a minimum of six consecutive trimesters of full-time study at the University; Spring and Fall trimesters are considered consecutive. The residency time shall normally be any period between passing the comprehensive examination and completion of the thesis. For this requirement, full-time study is interpreted as a minimum registration of 9 credit hours per trimester during the academic year and 6 credit hours during summer trimester. The Doctoral Advisory Committee must approve any variation from this requirement.

The minimum time to complete the DCE degree will be 3 years and normally it takes 4 years to complete the doctoral degree.

Complete the degree within 7 years of study.

All requirements for the doctoral degree must be completed within seven years following acceptance into the DCE program. Extensions will be allowed only in unusual circumstances and must be approved in writing by the Academic Dean.

Written Comprehensive Examination

The comprehensive examination will be written. It includes subjects that are deemed by the department to represent sufficient in-depth preparation and breadth for advanced study in the area of computer science and computer engineering. Only those who pass the Written Comprehensive Examination can take the Written Qualifying Examination.

Students currently studying at SVU for a Master's degree who are accepted into the doctoral program and who are at an advanced stage of the M.S. program may, with the approval of their academic advisor, take the comprehensive examination before completing the M.S. degree requirements. Students who have completed the MS degree requirements, and who have been accepted to the doctoral program, should take the comprehensive examination as soon as possible but no more than two years after beginning the program.

Only those students who pass the comprehensive examination shall be allowed to continue in the doctoral program. The comprehensive examination can be repeated only once at the discretion of the Doctoral Advisory Committee. A student failing the comprehensive examination the second time is disqualified from pursuing the doctoral degree at SVU.

A prospective doctoral student is required to pass a set of Written Comprehensive Examination in hardware & embedded systems and software & database systems to become a Doctoral candidate. The examination will be conducted twice a year in August and January.

The examination for concentration in Software/Database Systems will include the following six subjects:

1. CS440M Computer Networks I
2. CE450M Computer Architecture I
3. CS500 Operating System Design
4. CS502 Design and Analysis of Algorithms
5. CS520 Database System Principle
6. CS540 Computer Networks II

The examination for concentration in Hardware/Embedded Systems will include the following six subjects:

1. CS400M Operating Systems
2. CS440M Computer Networks I
3. CE450M Computer Architecture I
4. CS540 Computer Networks II
5. CE550 Computer Architecture II
6. CE570 IC Design

The examination is normally conducted in a 3-day period. A student approved to take the scheduled comprehensive examination the first time must take the six-subject examination during the same 3-day period of time.

To take the comprehensive examination, the prospective doctoral students are required to submit a "Request for Taking Doctoral Comprehensive Examination" form by the specified deadline to the administrative staff in charge of the DCE program. The administrative staff will send the students a confirmation message for the examination. Only those who have received confirmation for taking the comprehensive examination from the administrative staff are allowed to take the tests.

The minimum passing percentage of the overall average for the six subjects is 70%, with no single subject below 60%.

Each prospective doctoral student taking the examination will be notified of "passing" or "failing" the examination within a month after taking the examination. A prospective doctoral student must pass the Written Comprehensive Examination within the first two years of study in the DCE program and should start taking the examination no later than 18 months after enrolling in the program.

Written Qualifying Examination

After passing the Written Comprehensive Examination and completing Advanced DCE concentration area course requirements approved by the Doctoral Advisory Committee, the student is allowed to take the Written Qualifying Examination. The student should take the Written Qualifying Examination no more than three years after beginning the program. The examination will cover six advanced subjects in 600 level DCE concentration courses.

For students concentrated in the Software/Database Systems, the examination will include the following six subjects:

1. CS600 Advanced Operating Systems
2. CS602 Advanced Design and Analysis of Algorithms
3. CS620 Advanced Database System and Application
4. CS622 Advanced Business Intelligence and Analytics
5. CS640 Advanced Network System Development
6. CS660 Advanced Software Engineering

For students concentrated in the Hardware/Embedded Systems, the examination will include the following six subjects:

1. CS600 Advanced Operating Systems
2. CS640 Advanced Network System Development
3. CE650 Advanced Computer Architecture
4. CE651 Parallel Computer Architecture
5. CE671 Advanced VLSI Physical Design
6. CE672 Advanced ASIC Chip Synthesis

Qualifying examination may be repeated only once at the discretion of the Doctoral Advisory Committee.

The minimum passing percentage of the overall average for the six subjects is 75%, with no single subject below 70%.

A student who passes the Written Qualifying Examination is considered a degree candidate. The Written Qualifying Examination normally must be completed within three years from the time the student is admitted to the doctoral degree program.

Doctoral Research and Defense

After passing the Written Qualifying Examination, the student shall present a research plan/proposal to the Doctoral Research Committee for the subject of the research work.

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

The thesis advisor will form a Doctoral Research Committee by student's request. The committee will consist of at least five members, including the thesis advisor and at least two members from the Computer Science/Engineering department. The committee must also include at least one member from outside the department, preferably from outside the School of Computer Science/Engineering. At least one member should be from another accredited institution. The Doctoral Research Committee will review the student's proposed program of studies and determine any further changes that may be required prior to approving the proposal.

After completing the Capstone/Thesis research work, the student must present the results, findings of the research to the Doctoral Research Committee orally and obtain critiques, feedback, and suggestions from the committee. All five committee members, including one member from an outside institution, must unanimously vote "Yes" to pass. Candidates only have a single opportunity to pass this examination.

At least one month before the DCE degree is to be conferred, the candidate must submit to the Office of the Academic Dean two copies of the final version of the thesis describing the research in its entirety. The thesis is not accepted until approved by the Doctoral Research Committee and one or more refereed articles based on the thesis are accepted for publication in a professional journal or conferences proceedings approved by the Doctoral Research Committee.

CERTIFICATE PROGRAMS

Certificate in Computer Networks and Telecommunications Engineering

Program objectives: This program provides a foundation of knowledge and skills necessary to function as a technical professional in the area of computer networks. This program will provide all the necessary prerequisites for advanced study in a specialized area of network engineering.

This program is composed of 585 hours of training.

Certificate Core Courses	Minimum of 210 hours	
CS200	Introduction to Computer Science	75 hours
CS200L	Computer Science Introduction Lab	30 hours
CS206	Introduction to UNIX /Linux	75 hours
CS206L	UNIX/Linux Introduction Lab	30 hours
Electives	Minimum of 375 hours	
CS402	Programming Languages	45 hours
CS404	Compilers	45 hours
CS440	Computer Network I	45 hours
CS540	Computer Network II	45 hours
CS541	Internetworking with TCP/IP	45 hours
CS542	Network Management	45 hours
CS543	UNIX Network Programming	45 hours
CS544	Network Administration	45 hours
CS596	Special Topics in Computer Science	45/60 hours

Certificate in Database Design and Software Engineering

Program objectives: This program provides students with broad-based general knowledge of database systems and concepts along with state-of-the art practical skills needed by database management professionals to succeed in the workplace.

This program is composed of 615 hours of training.

Certificate Core Courses	Minimum of 210 hours	
CS200	Introduction to Computer Science	75 hours
CS200L	Computer Science Introduction Lab	30 hours
CS206	Introduction to UNIX /Linux	75 hours
CS206L	UNIX/Linux Introduction Lab	30 hours
Electives	Minimum of 405 hours	
CS400	Operating Systems	75 hours
CS400L	Operating Systems Lab	30 hours
CS402	Programming Languages	45 hours
CS404	Compilers	45 hours
CS420	Introduction to Database Systems	45 hours
CS440	Computer Network I	45 hours
CS500	Operating System Design	45 hours

CS522	Database Administration	45 hours
CS524	Transaction Processing and Distributed Databases	45 hours
CS543	UNIX Network Programming	45 hours
CE560	Embedded Computer Systems Design	45 hours
CS560	Software Engineering	45 hours
CE596	Special Topics in Computer Engineering	45/60 hours
CS596	Special Topics in Computer Science	45/60 hours

COURSE DESCRIPTIONS

Definitions of Subject Acronyms

BA: Business Administration
CE: Computer Engineering
CS: Computer Science
ECON: Economics
EN: Environmental Studies/ Environmental Science
ENGL: English
ESL: English as a Second Language
MATH: Mathematics
PHYS: Physics
POLS: Political Science
PSYCH: Psychology

Course Numbers

Course Number Prefix indicates each course level.

001-099 Non-Credit Courses

Courses with these numbers are offered by the university to permit students to make up deficiencies in previous training or to improve their facility in certain basic skills without earning credit.

100-299 Lower Division Courses

Courses with these numbers are for undergraduate students. They carry no graduate credit, although graduate students may be admitted to such courses in order to make up prerequisites or to gain a foundation for advanced courses.

300-499 Upper Division Courses

Courses with these numbers are for advanced undergraduate students. They constitute the advanced portion of an undergraduate program leading to the bachelor's degree.

500-699 Graduate Courses

Courses with these numbers are for graduate students.

Course Numbers Convention

Course Number Suffix indicates each course in the area of specialization.

Business Administration
00-09: Accounting
10-19: Information System
20-39: Finance
40-59: Management
60-79: Marketing
80-89: Others

Computer Science and Computer Engineering
00-19: Computer Science Introduction/ Fundamental/Operating Systems
20-29: Databases
30-39: Programming
40-49: Networks
50-59: Computer Engineering Introduction/ Fundamental
60-69: Software Systems/Embedded Systems
70-79: Board/Chip Hardware Systems
80-89: Others

Special Courses
91-92: Curricular Practical Training Project
96: Special Topics
97: Thesis
98: Projects/Research
99: Independent Studies

Lab Courses

Lab courses designated by an "L" are not considered a course variation.

GENERAL EDUCATION UNDERGRADUATE COURSES

Area A
Basic Subjects

ENGL100 English Composition
3 credit hours (3 hours of lecture)
The course is designed to introduce students to the general process of communicating meaning through writing and to provide students with practice in writing short personal essays. Students will be exposed to expository writing, supplemented by critical reading.
Pre-requisite: English Placement Test

MATH110 Mathematical Analysis
3 credit hours (3 hours of lecture)
This course is designed for preparing undergraduate students in obtaining knowledge and skills of algebra operations, trigonometry, analytic geometry and concepts of limits that lead to fundamentals of calculus. Students completing this course will have the capabilities to enroll in MATH200 (Calculus I). Topics covered in this course include: Functions with Graphs, Polynomial and Rational Functions, Exponential and Logarithmic Functions, Trigonometry, Analytic Trigonometry, Systems of Equations and Inequalities, Matrices and Determinants, Sequences, Series and Probability Theory. Analytic Geometry, Analytic Geometry in Three Dimensions, Vectors, Limits and Introduction to Calculus.
Pre-requisite: None

ENGL130 Fundamentals of Intercultural Communication
3 credit hours (3 hours of lecture)
This course focuses on direct experience and the development of skill in intercultural communication. This course provides opportunity for discussion of variations within and among cultures and encourages students to examine their own cultural heritage while gaining knowledge and perspective in a multifaceted globalized world.
Pre-requisite: None

ENGL200 Critical Thinking
3 credit hours (3 hours of lecture)
This course is designed to help students develop their skills in reasoning, analysis and the use of logical arguments. Students will learn how to better interpret and evaluate the materials they read and to understand and appreciate viewpoints which are different from their own. The course will be focused on learning different strategies to see the arguments for both sides of an issue as a part of the process of reaching sound conclusions.
Pre-requisite: ENGL100

Area B
Mathematics & Science Core

I. Mathematics

MATH100 College Algebra
3 credit hours (3 hours of lecture)
This course is designed to prepare undergraduate students to obtain knowledge and skills of algebraic operations. Students completing this course will be able to enroll in Math 200 (Calculus I). Topics covered in this course are: Review of Basic Concepts of Algebra, Equations and Inequalities, Coordinate Geometry and Graphing, Functions and Inverse Functions, Polynomial and Rational Functions, Exponential and Logarithmic Functions, Systems of Equations, Matrices Algebra, Conic Sections, Sequences and Mathematical Inductions.
Pre-requisite: None

MATH200 Calculus I
3 credit hours (3 hours of lecture)
This is the first course of undergraduate level calculus focused on conceptual understanding and technical competence developing in evaluating function limits and derivatives along with applications in science, engineering and business. Topics covered in this course are: Functions, Mathematical Models, Limits, Continuity, and Derivatives, Differentiation Rules, Implicit Differentiation, Applications of Differentiations in Various Fields, Finding Maximum and Minimum, L'Hopital's Rule, Newton's Method in Solving Non-linear Equations, Evaluating Anti-derivatives. The students enrolling in this course are assumed to have high school Pre-Calculus training with fundamental knowledge of algebra operations.
Pre-requisite: MATH 100 or MATH110

MATH202 Calculus II
3 credit hours (3 hours of lecture)
This is the second undergraduate level calculus course focused on conceptual understanding and technical competence through evaluating definite and indefinite integrals along with its applications in various fields. Topics covered in this course include: Fundamental Theorem of Calculus, Definite and Indefinite Integrals, Substitution Rule, Integration by Parts, Integration of Rational Functions by Partial Fractions, Improper Integrals, Strategies for Performing Integration, and Applications of Integration in Different Disciplines. Students enrolling in this course are recommended to have high school Pre-Calculus training with fundamental knowledge of algebra operations and basic differentiations.
Pre-requisite: MATH200

MATH204 Calculus III
3 credit hours (3 hours of lecture)
This is the third undergraduate level calculus course focused on conceptual understanding and technical competence developing in calculus with parametric equations, polar coordinates, power series, Taylor & Maclaurin series, partial derivatives and directional derivative evaluation and multiple integrals evaluation. Topics covered in this course include: Curves Represented by Parametric Equations, Calculus with Parametric Curves, Area and Arc Length in Polar Coordinates, Sequences and Series, Integral and Comparison Tests, Absolute Convergence and Ratio and Root Test, Power Series, Taylor and Maclaurin Series and their Applications, Functions of Several Variables, Partial Derivatives, Directional Derivatives and Gradient Vector, Lagrange Multiplier in Multi-variables Optimization, and Multiple Integrals and Its Applications. Students enrolling in this course are recommended to have high school Pre-Calculus training with fundamental knowledge of algebra operations and basic differentiations.
Pre-requisite: MATH202

MATH206 Discrete Mathematics
3 credit hours (3 hours of lecture)
This course is to provide fundamental mathematical concepts and methodologies of discrete mathematics for computer science majors. Subjects related to data structures and algorithm analysis in computer science and engineering will be presented. Topics covered in this course include: Algorithms, Induction and Recursion Algorithms Analysis, Counting Principles, Advanced Counting Techniques, Relations, Generating Functions, Graphs, Trees, and Boolean Algebra. Students enrolled in this course are recommended to have high school algebra and pre-calculus background.
Pre-requisite: None

MATH210 Introduction to Probability Theory
3 credit hours (3 hours of lecture)
This course provides undergraduate students with fundamental knowledge of probability distributions and applications of probability theory to various areas, such as science, engineering and business. Topics include: Introduction to Probability, Conditional Probability, Discrete Random Variables and Distributions, Expectation, Variance, Bernoulli Distribution, Binomial Distribution, Negative Binomial Distribution, Hyper geometric Distribution, and Poisson Distribution, Continuous Random Variables and Distributions, Normal Distribution, Log Normal Distribution, Exponential Distribution, Gamma Distribution, Rayleigh Distribution, Weibull Distribution, Beta Distribution, t-Distribution, Chi-Square Distribution, and F-Distribution, Joint Probability Distribution, Marginal Probability Distribution, Covariance and Correlation, Maximum Likelihood Estimation, Bayesian Estimation, and Sampling Distributions of Estimators.
Pre-requisite: MATH202

MATH212 Introduction to Statistical Methods
3 credit hours (3 hours of lecture)
This course provides undergraduate students with basic theory of statistics and its applications to various areas, such as science, engineering and business. Topics include: Nature of Statistics, Organizing of Data, Descriptive Measure of Sample Mean and Variance, Interquartile Range, Box-Whisker Plot, Sampling Distribution of the Sample Mean, Confidence Intervals for One Population Mean, Hypothesis Testing, Hypothesis Tests for One Population Mean, Inferences for Two Population Means, Inferences for Population Standard Deviations, Inferences for Population Proportions, Method of Least Squares, Descriptive Methods in Regression and Correlation, Multiple Linear Regression, Inferential Methods in Regression and Correlation, Analysis of Variance (ANOVA).
Pre-requisite: MATH202

MATH214 Differential Equations
3 credit hours (3 hours of lecture)
This course is focused on the concept, theory, methodology, and applications of Ordinary Differential Equations in various fields. Topics to be covered in this course include: First-Order Differential Equations and Mathematical Modeling of Real World Problems, Linear Second-Order Differential Equations, Phase Plane Analysis, Theory of Higher-Order Linear Differential Equations, Laplace Transformation Methods, Series Solutions of Differential Equations, and Matrix Methods for Linear Systems.
Pre-requisite: MATH202

II. Natural Science

EN200 Energy and Environment
3 credit hours (3 hours of lecture)
This is an interdisciplinary course between energy science and environment science which includes two major subjects between energy and environmental issues: energy science and technologies, and social and environmental consequences of various energy technologies. Topics to be covered in energy science and technologies include: the geological origins of fossil fuels and their uneven global distribution and depletion rates; the scientific principles and technologies governing fossil, wind, biomass, water-tidal, geothermal and solar energy, nuclear fission and nuclear fusion energy, the use and storage of energy by plants. Topics to be covered in social and environmental consequences of various energy technologies are: the greenhouse effect and global warming, acid rain; the hazards and disposal of radioactive wastes; traffic congestion, urban sprawl; and social-economic inequalities in the access to energy, and future solutions to the energy and environmental issues.
Pre-requisite: None

EN220 Introduction to Environmental Science
3 credit hours (3 hours of lecture)
This course is designed to facilitate knowledgeable opinions and meaningful decisions about today's environmental issues. This course introduces ecological principles as they apply to the interrelated dilemmas of sustainability. The purpose of this course is to provide a basic introduction to ecological systems and environmental issues. We will study the impact of humans on ecosystems, with a focus on environmental problems and sustainable solutions. After a brief review of basic scientific and ecological concepts, we will cover the three fundamental aspects of environmental studies - population, resource depletion, and pollution. Topics in this course include: overpopulation, pollution, waste management, and over-consumption of natural resources, conservation management, bio-fuels, recycling, and the ethics of land use.
Pre-requisite: None

PHYS200 College Physics I
3 credit hours (3 hours of lecture)
This course is the first part of college physics and designed for preparing Computer Science and Engineering undergraduate students in obtaining knowledge and ideas of physical concepts and theory in mechanics and thermodynamics with applications in those areas. Topics covered in this course include: Kinematics in One, Two and Three Dimensions, Newton's Law of Motion and Applications, Work, Energy and Conservation of Energy, Conservation of Linear and Angular Momentum, Static Equilibrium, Fluids, Oscillations, Wave Motions and Sound, The Ideal Gas Law, Kinetic Theory of Gases, Heat, The First and Second Law of Thermodynamics.
Pre-requisite: None

PHYS202 College Physics II
3 credit hours (3 hours of lecture)
This course is the second part of college physics and designed for preparing Computer Science and Engineering undergraduate students in obtaining knowledge and ideas of physical concepts and theory in electricity, magnetism, electromagnetic waves, particle and wave nature of light with applications in those areas. Topics covered in this course include: Electric Charge and Electric Field, Gauss Law, Electric Potential, Electric Energy Storage, Electric Currents and Resistance, Magnetism, Magnetic Field, Electromagnetic Induction and Faraday's Law, Maxwell Equations and Electromagnetic Waves, Particle Nature of Light, Reflection and Refraction, Wave Nature of Light, Interference and Diffraction.
Pre-requisite: PHYS200

III. Social Science

ECON100 Principles of Economics: Macroeconomics
3 credit hours (3 hours of lecture)
This course analyzes what determines 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 in the aggregate, how to interpret, analyze, and operate within a changing macroeconomic environment.
Pre-requisite: None

POLS100 U.S. History
3 credit hours (3 hours of lecture)
This course covers the treatment of essentials of U.S. history and politics. Topics covered include U.S. history, government and ideals.
Pre-requisite: None

PSYCH100 General Psychology
3 credit hours (3 hours of lecture)
This course studies the perception, attention, learning, remembering, thinking, development of the individual, intelligence, aptitudes, emotions, motivation, adjustment and conflict; designed to give insight into oneself and others.
Pre-requisite: None

POLS150 American Government
3 credit hours (3 hours of lecture)
This course covers the institutions and processes of American government and democracy; the U.S. Constitution and California State and local government. Topics covered include American and California government.
Pre-requisite: None

ECON200 Principles of Economics: Microeconomics
3 credit hours (3 hours of lecture)
Principles of microeconomics are explored, including market supply and demand, production and cost functions, industry structure, and product and resource pricing. Topics covered include allocation of resources and distribution of income as affected by the workings of the price system and by government policies.
Pre-requisite: None

Area C
Humanities and Communication

ENGL220 Technical Writing
3 credit hours (3 hours of lecture)
This is an advanced writing course that prepares students for technical report – writing and presentations. Through practice and evaluation, this course will help students improve their writing skills in subject-related areas, project proposals and career resumes.

ENGL230 Professional Communication I
3 credit hours (3 hours of lecture)
This course is designed to increase an individual's communicative capacity in the English language by introducing the particular forms and conventions of the language as it is used in professional settings. Students will focus on identifying and developing the language required to obtain their own specific professional objectives through the presentation and refinement of the various forms of oral and written communication commonly employed in business environments. Particular emphasis is given to the crafting and presentation of information acquired through complex research, as well as to the employment search, including the drafting of competent resumes and cover letters, the requirements of professional demeanor and the qualities of effective interviewing.
Pre-requisite: None

ENGL232 Professional Communication II
3 credit hours (3 hours of lecture)
This course is designed to complement Professional Communication I and focuses on increasing an individual's communicative capacity through increasingly sophisticated, complex and nuanced presentations in English. Particular emphasis is given to the structure, content and tone of the language used in professional correspondence, including letters and conversations of inquiry, reply, complaint, negotiation, acceptance and rejection, as well as the elements of creating dynamic and effective multimedia presentations.
Pre-requisite: None

COMPUTER SCIENCE & COMPUTER ENGINEERING UNDERGRADUATE COURSES

CS200 Introduction to Computer Science
3 credit hours (3 hours of lecture)
Computer science is the study of the theoretical foundations of information and computation. This is an introductory course for students with little or no computer science background. Topics include: history of computing, the basics of hardware and software, operating systems, computer networks, Internet technologies, programming, and software applications.
Pre-requisite: None
Co-requisite: CS200L

CS200L Introduction to Computer Science Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS200. Students will learn basic knowledge in operating computers. Topics include: the basics of hardware and software, operating systems, computer networks, Internet technologies, programming, software applications.
Pre-requisite: None
Co-requisite: CS200

CS206 Introduction to UNIX/Linux
3 credit hours (3 hours of lecture)
This course is a practical introduction to Unix and Linux operating systems. Topics include: user accounts, the visual editor, file system and access control, process management, system calls, system utilities, Unix handling of files and processes, basic shell utilities and shell scripting.
Pre-requisite: None
Co-requisite: CS206L

CS206L Introduction to UNIX/Linux Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS206. Students will gain hands-on experience with Unix and Linux. Topics include: user accounts, the visual editor, file system and access control, process management, system calls, system utilities, Unix handling of files and processes, basic shell utilities and shell scripting.
Pre-requisite: None
Co-requisite: CS206

CS230 Programming in C++
3 credit hours (3 hours of lecture)
This course is designed for first-time programmers as well as experienced programmers who want to learn C++. A programming course is different from theory courses in that students learn from examples, from practice, and from mistakes. Students will devote a lot of time to writing programs, testing them, and fixing errors. We start by learning fundamental programming skills such as loops, functions, and arrays followed by object-oriented programming concepts and the use of the object-oriented approach to build interesting applications with exception handling, I/O, and data structures. By the end of this course, students will have a solid foundation to build C++ applications as well as learning other object-oriented languages when necessary.
Pre-requisite: None
Co-requisite: CS230L

CS230L C++ Programming Lab
1 credit hour (2 hours of lab)
The lab course is designed to be taken with CS230. Students will devote a lot of time to writing programs, testing them, and fixing errors. The programming assignments will help students learn key features of the C++ language and improve their programming skills. Topics include: elementary programming, selections, loops, functions, arrays, objects and classes, pointers and dynamic memory management, templates and vectors, file I/O, operator overloading, inheritance and polymorphism, exception handling.
Pre-requisite: None
Co-requisite: CS230

CS300 Data Structures
3 credit hours (3 hours of lecture)
A data structure is a particular way of storing and organizing data in a computer so that it can be used efficiently. This course introduces the basic data structures as the building blocks of computer software. Students will also learn the efficient use of data structures and algorithms. Topics include: arrays, lists, stacks, queues, trees, heaps, graphs, sorting, searching, hashing, and Big-O notation.
Pre-requisite: CS230 or CS332 (or equivalent)
Co-requisite: CS300L

CS300L Data Structures Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS300. Through lab exercises, students will gain practical experience with the implementation and application of various data structures. Topics include: arrays, lists, stacks, queues, trees, heaps, graphs, sorting, searching, hashing, and Big-O notation.
Pre-requisite: CS230 or CS332 (or equivalent)
Co-requisite: CS300

CS332 Programming in Java
3 credit hours (3 hours of lecture)
Java is currently one of the most popular programming languages in use, and is widely used from application software to web applications. It was originally developed by James Gosling to be a simple, object-oriented, robust, secure, architecture neutral, portable, concurrent, and dynamic language. This course first introduces basic programming constructs such as loops, methods, and arrays followed by object-oriented programming concepts and the rich GUI API of Java. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, object-oriented design and patterns, GUI basics, graphics, event-driven programming, exception handling.
Pre-requisite: None
Co-requisite: CS332L

CS332L Java Programming Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS332. Students will devote a lot of time to writing programs, testing them, and fixing errors. The programming assignments will help students learn key features of the Java language and improve their programming skills. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, object-oriented design and patterns, GUI basics, graphics, event-driven programming, exception handling.
Pre-requisite: None
Co-requisite: CS332

CE350 Circuit Theory
3 credit hours (3 hours of lecture)
Circuit theory is the key to understanding the importance of electric circuits to the engineering world and the quality of our lives. This course provides the fundamental aspects of electric circuits and strong problem solving skills to resolve circuit problems using circuit laws and theorems. Topics include analysis of circuits containing resistors, capacitors, inductors and controlled source, Kirchhoff's Law, simple resistive circuits, node-voltage method, mesh-current method, Thevenin's Theorem, Norton's theorem, operational amplifier and its applications, and transient analysis of first and second order circuits.
Pre-requisite: MATH214

CE353 Introduction to Digital Electronics
3 credit hours (3 hours of lecture)
This course is designed to be the first of the digital circuit series. It provides the fundamentals of digital circuit operations so that students can be ready for practical design considerations in digital electronics, and it includes hands-on experience with digital logic elements and testing and measuring equipment. Topics covered in this course include: number systems and codes, logic gates and Boolean algebra, combinational logic circuits, flip-flops and related devices, digital arithmetic, counters and registers, integrated-circuit logic families, A/D and D/A converters.
Pre-requisite: None
Co-requisite: CE353L

CE353L Digital Electronics Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CE353. Students will gain hands-on experience with digital electronics through lab exercises. The assignments will help students learn key features of electronics. Topics include: logic gates, Boolean algebra, combinational logic circuits, digital arithmetic, integrated-circuit families, A/D, and D/A converters.
Pre-requisite: None
Co-requisite: CE353

CS400 Operating Systems
3 credit hours (3 hours of lecture)
An operating system (OS) is a set of system software programs in a computer that regulate the ways application software programs use the computer hardware and the ways that users control the computer. This class introduces the basic facilities provided in modern operating systems. Topics include: principles of operating system design and implementation; concurrent processes; inter-process communication; job and process scheduling; deadlock handling; issues in memory management (virtual memory, segmentation, paging); and auxiliary storage management (file systems, directory structuring, protection mechanisms); performance issues; and case studies.
Pre-requisite: CS230 or CS206 (or equivalent)
Co-requisite: CS400L

CS400L Operating Systems Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS400. Through lab exercises, students will gain hands-on experience by implementing key features of operating systems. Topics include: process management, memory management, and file systems.
Pre-requisite: CS230 or CS206 (or equivalent)
Co-requisite: CS400

CS402 Programming Languages
3 credit hours (3 hours of lecture)
Programming languages are the medium of expression in the art of programming. This course explores the issues and trade-offs in the design and implementation of modern programming languages. Topics include: functions, procedures, types, memory management, controls, data abstraction, modularity, object-oriented programming, run-time efficiency, portability and safety.
Pre-requisite: CS230, CS332 or CS430 (or equivalent)

CS404 Compilers
3 credit hours (3 hours of lecture)
A compiler is a computer program that transforms source code written in a programming language into the target language to create an executable program. This course introduces the student to the principles and practices of compiler implementation. Topics include: regular expressions, lexical analysis, syntax analysis (parsing), context-free language, semantic analysis, intermediate code generation and optimization, object code generation and optimization.
Pre-requisite: CS300 or CS430

CS420 Introduction to Database Systems
3 credit hours (3 hours of lecture)
A database management system provides efficient, reliable, convenient, and safe multi-user storage of and access to massive amounts of persistent data. This course covers the basic concepts of a database system. Topics include: data models, relational algebra, database design, E-R modeling, functional dependency analysis, normalization, SQL queries, updates, constraints, triggers, views, stored procedures, and embedded and dynamic SQL.
Pre-requisite: Familiarity with data structures and programming.

CS430 Object-Oriented Programming
3 credit hours (3 hours of lecture)
Based on the Java programming language, this course first introduces fundamental programming techniques with selections, loops, methods, and arrays. The second part of the course focuses on object-oriented programming concepts such as classes, inheritance, polymorphism, abstract classes, and interfaces. The course concludes with an overview of the Java Collection Framework, which defines a set of useful API for data structures. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, generics, Java Collection Framework.
Pre-requisite: None
Co-requisite: CS430L

CS430L Object-Oriented Programming Lab
3 credit hours (3 hours of lecture)
This course is a co-requisite for CS430 (Object-Oriented Programming). There is no better way of learning how to program than by actually doing it. The lab course provides the students with hands-on experience in OOP using Java programming language. Programming lab exercises given in this course correspond to the topics discussed in CS430. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, generics, Java Collection Framework.
Pre-requisite: None
Co-requisite: CS430

CS440 Computer Networks I
3 credit hours (3 hours of lecture)
Computer networks form the backbone of technology in the information age. This course is a comprehensive technical introduction to the increasingly important and exciting field of computer networking. It covers the theory and practice of essential computer network hardware, architecture and protocols. Topics include: signal transmission; Fourier analysis, modulation, and multiplexing; OSI reference model; Media Access Control; error detection; flow control; error control; congestion control; routing and network applications.
Pre-requisite: Upper Division Standing

CE450 Computer Architecture I
3 credit hours (3 hours of lecture)
The goal of this course is to provide the students with a working knowledge of how computers operate and the general principles that affect their performance. The topics of this course include an in-depth presentation on major functional units of small to medium-scale digital computers, on machine instruction set characteristics, pipelining and caching, design of arithmetic and logic data path, and the detailed control units. The key aspects of CPU performance, RISC processor design and instruction-level implication will also be addressed.
Pre-requisite: CE452

CE452 Logic Design
3 credit hours (3 hours of lecture)
This course covers the advanced part of the Logic Design including how to use Verilog to do Logic Design. The course topics include-basic Boolean Rules, Boolean Reduction, Karnaugh Map, QuineMcCluskey Method, Combinational Logic Design, Sequential Logic Design, Verilog Syntax, Verilog Testbench, Verilog Simulation.
Pre-requisite: None
Co-requisite: CE452L

CE452L Logic Design Lab
1 credit hour (2 hours of lab)
This course covers the Lab exercises for the CE452 Advanced Logic Design, including how touse Cadence Virtuoso tool to create standard cell symbol view, schematic view, and schematic designs; and how to write Verilog RTL code and gate level netlist, how to run Verilog functional simulation, how to display and check the Verilog simulation output waveforms for the simple standard cells and combinational/sequential logic designs.
Pre-requisite: None
Co-requisite: CE452

CE454 Microprocessor Design
3 credit hours (3 hours of lecture)
This course in Microprocessor design gives an overview of the computer architecture, the components of a microprocessor, and some of the basic architectures of modern microprocessors. This course covers essential information about the electrical and logical issues of interfacing devices in microprocessor-based systems. Topics include memory-interfacing techniques; interfacing peripherals; keyboards, displays; analog to digital converters; on-chip bus interconnect.
Pre-requisite: CE452
Co-requisite: CE454L

CE454L Microprocessor Design Lab
1 credit hour (2 hours of lab)
This course in Microprocessor design gives an overview of the computer architecture, the components of a microprocessor, and some of the basic architectures of modern microprocessors. This course covers essential information about the electrical and logical issues of interfacing devices in microprocessor-based systems. Topics include memory-interfacing techniques; interfacing peripherals; keyboards, displays; analog to digital converters; on-chip bus interconnect.
Pre-requisite: CE452
Co-requisite: CE454

CE456 Fundamentals of VLSI Design
3 credit hours (3 hours of lecture)
VLSI Design is the design process of creating integrated circuits by combining thousands of transistors into a single chip. VLSI can incorporate components that perform analog, digital or both. The basic of VLSI design coverage of key CMOS/BiCMOS design requirements. Topics include: the concepts and techniques of modern integrated circuit design, IC history, VLSI design flow, MOS transistor theory, CMOS fabrication technology, layout design & stick diagrams, CMOS design flow methods, circuit simulation, circuit performance estimation, design rules, and design verification, using commercial computer aided design (CAD) tools.
Pre-requisite: CE353

CE460 Introduction to Embedded Systems
3 credit hours (3 hours of lecture)
This course will cover the basic concepts of embedded system architecture and the methodology behind the cross development toolchains. There will be an overview of the Linux kernel configuration, types of bootloaders, types of Linux file systems, and the use of the tool chain to build an embedded Linux operating system and file system. The class will review topics on Linux internals, including the scheduler, device drivers, multiprocessing, multithreading, and interrupt handlers. There will be lab exercises to provide hands-on experience on cross platform development for an embedded Linux 2.6 system on an ARM 9 microcontroller target. Course topics include: Embedded Linux Basic Concepts, GNU Cross-Platform Development Tool chain, Embedded Boot loaders, Root File System Selection For Embedded Devices, Linux Kernel Considerations, Network Settings in Embedded Systems, Linux Kernel Overview (Kernel Modules, Device Drivers), Linux Kernel Overview (Linux Scheduler, Multi-Processing, Multi-Threading, Interrupt Handlers), Debugging Tools and Real Time Systems Overview.
Pre-requisite: CS206 and CS230
Co-requisite: CE460L

CE460L Introduction to Embedded Systems Lab
1 credit hour (2 hours of lab)
The lab course is designed to be taken with CE460. Students will gain hands-on experience with building embedded systems through lab work and exercises. The lab assignments will help students learn key practical knowledge and skills of embedded systems design. Topics include: Embedded Linux Basic Concepts, GNU Cross-Platform Development Tool chain, Embedded Boot loaders, Root File System Selection For Embedded Devices, Linux Kernel Considerations, Network Settings in Embedded Systems, Linux Kernel Overview (Kernel Modules, Device Drivers), Linux Kernel Overview (Linux Scheduler, Multi-Processing, Multi-Threading, Interrupt Handlers), Debugging Tools and Real Time Systems Overview
Pre-requisite: CS206 and CS230
Co-requisite: CE460

CE480 Introduction to Nanotechnology
3 credit hours (3 hours of lecture)
This course provides an overview of the key elements of physics, chemistry, biology, and engineering related to the basic nanotechnology concept. It also addresses the fundamental scientific and technological underpinnings of the important new field of nanotechnology used in various areas. Topics include: quantum theory, nano-electronics and materials, and the applications applied to the various fields such as defense systems, body health, medicine, security systems, and current green technology.
Pre-requisite: PHYS202

CE496 Special Topics in Computer Engineering
3 credit hours (3 hours of lecture)
The CE496 covers various subjects of current interest in the field of Computer Engineering. A student may take this more than once if the topics are different. Topics include: IC Layout Design and Basic IC Layout Design.
Pre-requisite: Upper Division Standing

CS496 Special Topics in Computer Science
3 credit hours (3 hours of lecture)
This course covers various subjects of current interests in the field of Computer Science. A student may take this course more than once if the offered topics are different. Topics include: Bioinformatics, Special Project in Bioinformatics, and Clinical Trial & SAS Applications.
Pre-requisite: Upper Division Standing

CE498 Undergraduate Project
3 credit hours (3 contact hours)
CE498 is a supervised development, analysis, and/or research in the field of Computer Engineering. To initiate an undergraduate project, the student should set up a counseling session with a potential project instructor to define the project objective, scope, and progress check points. In general, the student should meet with his or her instructor at least biweekly and submit a formal report and presentation for discussion and evaluation. Upon completion, and with the instructor's approval, a final report shall be submitted to CE department and a formal project presentation shall be presented to the department.
Pre-requisite: Upper Division Standing

CS498 Undergraduate Project
3 credit hours (3 contact hours)
CS498 is a supervised development, analysis, and/or research in the field of Computer Science. To initiate an undergraduate project, the student should set up a counseling session with a potential project instructor to define the project objective, scope, and progress check points. In general, the student should meet with his or her instructor at least biweekly and submit a formal report and presentation for discussion and evaluation. Upon completion, and with the instructor's approval, a final report shall be submitted to CS department and a formal project presentation shall be presented to the department.
Pre-requisite: Upper Division Standing

CE499 Independent Study
1-3 credit hours (1-3 contact hours)
Independent study tailored to a student's special interest in computer 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.
Pre-requisite: Upper Division Standing

CS499 Independent Study
1-3 credit hours (1-3 contact hours)
Independent study is tailored to a student's special interest in computer science 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.
Pre-requisite: Upper Division Standing

COMPUTER SCIENCE & COMPUTER ENGINEERING GRADUATE COURSES

CS400 Operating Systems
3 credit hours (3 hours of lecture)
An operating system (OS) is a set of system software programs in a computer that regulate the ways application software programs use the computer hardware and the ways that users control the computer. This class introduces the basic facilities provided in modern operating systems. Topics include: principles of operating system design and implementation; concurrent processes; inter-process communication; job and process scheduling; deadlock handling; issues in memory management (virtual memory, segmentation, paging); and auxiliary storage management (file systems, directory structuring, protection mechanisms); performance issues; and case studies.
Pre-requisite: CS230 or CS206 (or equivalent)
Co-requisite: CS400L

CS400L Operating Systems Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with CS400. Through lab exercises, students will gain hands-on experience by implementing key features of operating systems. Topics include: process management, memory management, and file systems.
Pre-requisite: CS230 or CS206 (or equivalent)
Co-requisite: CS400

CS402 Programming Languages
3 credit hours (3 hours of lecture)
Programming languages are the medium of expression in the art of programming. This course explores the issues and trade-offs in the design and implementation of modern programming languages. Topics include: functions, procedures, types, memory management, controls, data abstraction, modularity, object-oriented programming, run-time efficiency, portability and safety.
Pre-requisite: CS230, CS332 or CS430 (or equivalent)

CS404 Compilers
3 credit hours (3 hours of lecture)
A compiler is a computer program that transforms source code written in a programming language into the target language to create an executable program. This course introduces the student to the principles and practices of compiler implementation. Topics include: regular expressions, lexical analysis, syntax analysis (parsing), context-free language, semantic analysis, intermediate code generation and optimization, object code generation and optimization.
Pre-requisite: CS300 or CS430

CS420 Introduction to Database Systems
3 credit hours (3 hours of lecture)
A database management system provides efficient, reliable, convenient, and safe multi-user storage of and access to massive amounts of persistent data. This course covers the basic concepts of a database system. Topics include: data models, relational algebra, database design, E-R modeling, functional dependency analysis, normalization, SQL queries, updates, constraints, triggers, views, stored procedures, and embedded and dynamic SQL.
Pre-requisite: Familiarity with data structures and programming.

CS430 Object-Oriented Programming
3 credit hours (3 hours of lecture)
Based on the Java programming language, this course first introduces fundamental programming techniques with selections, loops, methods, and arrays. The second part of the course focuses on object-oriented programming concepts such as classes, inheritance, polymorphism, abstract classes, and interfaces. The course concludes with an overview of the Java Collection Framework, which defines a set of useful API for data structures. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, generics, Java Collection Framework.
Pre-requisite: None
Co-requisite: CS430L

CS430L Object-Oriented Programming Lab
3 credit hours (3 hours of lecture)
This course is a co-requisite for CS430 (Object-Oriented Programming). There is no better way of learning how to program than by actually doing it. The lab course provides the students with hands-on experience in OOP using Java programming language. Programming lab exercises given in this course correspond to the topics discussed in CS430. Topics include: elementary programming, selections, loops, methods, arrays, objects and classes, strings and text I/O, inheritance and polymorphism, abstract classes and interfaces, generics, Java Collection Framework.
Pre-requisite: None
Co-requisite: CS430

CS440 Computer Networks I
3 credit hours (3 hours of lecture)
Computer networks form the backbone of technology in the information age. This course is a comprehensive technical introduction to the increasingly important and exciting field of computer networking. It covers the theory and practice of essential computer network hardware, architecture and protocols. Topics include: signal transmission; Fourier analysis, modulation, and multiplexing; OSI reference model; Media Access Control; error detection; flow control; error control; congestion control; routing and network applications.
Pre-requisite: Upper Division Standing

CE450 Computer Architecture I
3 credit hours (3 hours of lecture)
The goal of this course is to provide the students with a working knowledge of how computers operate and the general principles that affect their performance. The topics of this course include an in-depth presentation on major functional units of small to medium-scale digital computers, on machine instruction set characteristics, pipelining and caching, design of arithmetic and logic data path, and the detailed control units. The key aspects of CPU performance, RISC processor design and instruction-level implication will also be addressed.
Pre-requisite: CE452

CE452 Logic Design
3 credit hours (3 hours of lecture)
This course covers the advanced part of the Logic Design including how to use Verilog to do Logic Design. The course topics include-basic Boolean Rules, Boolean Reduction, Karnaugh Map, QuineMcCluskey Method, Combinational Logic Design, Sequential Logic Design, Verilog Syntax, Verilog Testbench, Verilog Simulation.
Pre-requisite: None
Co-requisite: CE452L

CE452L Logic Design Lab
1 credit hour (2 hours of lab)
This course covers the Lab exercises for the CE452 Advanced Logic Design, including how touse Cadence Virtuoso tool to create standard cell symbol view, schematic view, and schematic designs; and how to write Verilog RTL code and gate level netlist, how to run Verilog functional simulation, how to display and check the Verilog simulation output waveforms for the simple standard cells and combinational/sequential logic designs.
Pre-requisite: None
Co-requisite: CE452

CE454 Microprocessor Design
3 credit hours (3 hours of lecture)
This course in Microprocessor design gives an overview of the computer architecture, the components of a microprocessor, and some of the basic architectures of modern microprocessors. This course covers essential information about the electrical and logical issues of interfacing devices in microprocessor-based systems. Topics include memory-interfacing techniques; interfacing peripherals; keyboards, displays; analog to digital converters; on-chip bus interconnect.
Pre-requisite: CE452
Co-requisite: CE454L

CE454L Microprocessor Design Lab
1 credit hour (2 hours of lab)
This course in Microprocessor design gives an overview of the computer architecture, the components of a microprocessor, and some of the basic architectures of modern microprocessors. This course covers essential information about the electrical and logical issues of interfacing devices in microprocessor-based systems. Topics include memory-interfacing techniques; interfacing peripherals; keyboards, displays; analog to digital converters; on-chip bus interconnect.
Pre-requisite: CE452
Co-requisite: CE454

CE460 Introduction to Embedded Systems
3 credit hours (3 hours of lecture)
This course will cover the basic concepts of embedded system architecture and the methodology behind the cross development toolchains. There will be an overview of the Linux kernel configuration, types of bootloaders, types of Linux file systems, and the use of the tool chain to build an embedded Linux operating system and file system. The class will review topics on Linux internals, including the scheduler, device drivers, multiprocessing, multithreading, and interrupt handlers. There will be lab exercises to provide hands-on experience on cross platform development for an embedded Linux 2.6 system on an ARM 9 microcontroller target. Course topics include: Embedded Linux Basic Concepts, GNU Cross-Platform Development Tool chain, Embedded Boot loaders, Root File System Selection For Embedded Devices, Linux Kernel Considerations, Network Settings in Embedded Systems, Linux Kernel Overview (Kernel Modules, Device Drivers), Linux Kernel Overview (Linux Scheduler, Multi-Processing, Multi-Threading, Interrupt Handlers), Debugging Tools and Real Time Systems Overview.
Pre-requisite: CS206 and CS230
Co-requisite: CE460L

CE460L Introduction to Embedded Systems Lab
1 credit hour (2 hours of lab)
The lab course is designed to be taken with CE460. Students will gain hands-on experience with building embedded systems through lab work and exercises. The lab assignments will help students learn key practical knowledge and skills of embedded systems design. Topics include: Embedded Linux Basic Concepts, GNU Cross-Platform Development Tool chain, Embedded Boot loaders, Root File System Selection For Embedded Devices, Linux Kernel Considerations, Network Settings in Embedded Systems, Linux Kernel Overview (Kernel Modules, Device Drivers), Linux Kernel Overview (Linux Scheduler, Multi-Processing, Multi-Threading, Interrupt Handlers), Debugging Tools and Real Time Systems Overview
Pre-requisite: CS206 and CS230
Co-requisite: CE460

CS500 Operating System Design
3 credit hours (3 hours of lecture)
The course covers the internals of the different Operating Systems subsystems including: Process Mgmt, Threads and SMP, Concurrency Control, Memory Mgmt, Scheduling, I/O Mgmt and Disk Scheduling, File Mgmt, and Security threats and techniques to handle it.
Pre-requisite: CS400 Knowledge of development environment on UNIX or LINUX operating system, editing, compiling, and debugging on UNIX or LINUX.
Co-Requisite: Background on editing, compiling and debugging C programs on Linux or UNIX

CS502 Design and Analysis of Algorithms
3 credit hours (3 hours of lecture)
An algorithm is an effective method for solving a problem expressed as a finite sequence of instructions. This course provides students with balanced introduction on computational models for asymptotic time-space complexity analyses as well as algorithmic design techniques with performance and cost implications. Topics include: growth of functions, recurrences, probabilistic analysis and randomized algorithms, sorting algorithms, binary search trees, red-black trees, dynamic programming, greedy algorithms, B-trees, heaps, graph algorithms, minimum spanning trees, shortest paths, maximum flow, sorting networks.
Pre-requisite: CS300 or CS430

CS520 Database System Principles
3 credit hours (3 hours of lecture)
Students will learn relational database design both at the physical and at the logical levels. An overview of relational algebra, and will cover the SQL programming language. Special topics to be covered include constraints and triggers, views and indexes. In addition we cover SQL in the server environment including embedded SQL, stored procedure, CLI, and JDBC. We close by covering an overview for query processing and high-level overview of SQL compiler design.
Pre-requisite: CS420

CS522 Database Administration
3 credit hours (3 hours of lecture)
Database administration is the key to success of any Relational Database Management System (RDBMS). This course provides the fundamental concepts and techniques involved in the administration of an Oracle database. Topics include: SQL queries, DML, DDL, Oracle database architecture, instance management, control file, online redo log file, table space and data file, tables, indexes, sequence/synonym, views, user management, privileges, roles.
Pre-requisite: CS420

CS524 Transaction Processing and Distributed Databases
3 credit hours (3 hours of lecture)
In a distributed database system, collection of data can be distributed across multiple physical locations. It allows better performance, increased reliability and availability, distributed query processing as well as distributed transaction management. However, it also introduces greater complexity in the design, security, maintenance, and concurrency control of the database. This course discusses the design, advantages, and challenges of distributed database systems. Topics include: principles and organization of distributed databases, distributed database design, concurrent control, reliability and commit protocols, and distributed algorithms for data management.
Pre-requisite: CS520

CS540 Computer Networks II
3 credit hours (3 hours of lecture)
For students with CS440 or equivalent background, this course provides detailed coverage of advanced topics in computer networks. Topics include: layer 2 switching and spanning tree protocol, VLAN, TCP/IP, VLSM and subnet, IP routing protocols (RIP, OSPF, BGP, and ISIS), advanced network IPV6 Addressing scheme and static routing, switch/router testing methodology, enterprise network design. The course learning will be aided by regular GNS3 Lab sessions.
Pre-requisite: CS440

CS541 Internetworking with TCP/IP
3 credit hours (3 hours of lecture)
TCP/IP is the fundamental building block of the Internet. This course focuses on the TCP/IP protocol suite as an enabling technology for building scalable, multi-vendor networks, giving students a solid foundation in TCP/IP theory and application. Topics include: Internet protocol suite overview, IP addressing, subnet structuring, link-layer technologies (Ethernet, PPP/SLIP, IP fragmentation and re-assembly), routing protocols (OSPF and RIP), and supporting protocols (ARP, RARP, ICMP, IGMP, and DHCP).
Pre-requisite: CS440

CS542 Network Management
3 credit hours (3 hours of lecture)
This course presents the basic principles and functionality of network management systems and introduces you to network management protocols, i.e., Simple Network Management Protocol (SNMP). Future trends in network management technologies are also discussed. Topics include: overview of network management, hands-on network design, modeling and analysis of computer networks, network operating systems, probability theory for network engineers, network security, network requirements for multimedia, SNMP, network wiring theory and practice, ATM and frame relay network modeling, network management tools, ASN.1, SNMPv1 and standard MIBs, SNMPv2, SNMPv3.
Pre-requisite: CS440

CS543 UNIX Network Programming
3 credit hours (3 hours of lecture)
Students learn how to use the network services provided by the Unix operating system to develop robust distributed applications. Topics include the client/server model for distributed applications; the Open System Interconnection (OSI) network model; abstract transport layer services; programming with the BSD sockets; API; comparison of BSD Sockets and System V Transport Layer Interface; usage of domain name resolution services; event-driven programming in client/server systems; and design patterns for network programming.
Pre-requisites: CS206 and CS440

CS544 Network Administration
3 credit hours (3 hours of lecture)
This course first introduces the basics of the TCP/IP protocols and services that provide the fundamental concepts of networks. It then covers key concepts involved in network administration. Topics include: TCP/IP, addressing, network services, client & server, network installation planning, TCP/IP & Unix kernel configuration, Ethernet & PPP interface configuration, routing table, DNS name services, POP mail servers, network file system, Sendmail, troubleshooting, security, and keeping up with changing network information.
Pre-requisite: CS440

CS545 Network Security
3 credit hours (3 hours of lecture)
This is an introductory course to network security. Topics covered include: basics of cryptography, symmetric and asymmetric cryptography, basic number theory, and classical cryptosystems, public key cryptography, one-way functions, Diffie-Hellman key exchange, key distribution problem. Public-key management, Stream cipher RC4, RSA cryptosystem, El Gamal cryptosystem, hash functions SHA-512, Whirlpool, HMAC, digital signatures, data authentication and integrity, MAC, cryptography a la Claude E. Shannon, Data Encryption Standard, and Advanced Encryption Standard (Rijndael), elliptic curves based cryptosystem, crypto placements in networks, public-key infrastructure (PKI), IPsec, SSL/TLS, secure email (PGP, S/MIME), Kerberos, secure remote logins, wireless network security (WEP, WPA, WPA2, Bluetooth security, wireless mesh network security), network perimeter security (firewalls, viruses, worms, Trojan horses, web security, denial of service attacks, anti-malicious software), intrusion detection (network-based and host-based detections, signature detections, behavioral forensics, honeypots).
Pre-requisite: CS440

CS546 Network Design and Analysis
3 credit hours (3 hours of lecture)
Overview of techniques used in design and analysis of computer networks. Well known graph-theoretic techniques used in computer networks. Topics covered in this course include: Evaluation of network connectivity and its reliability, analysis of networks via queuing theory and simulation, factorial design, design of different types of networks (i.e. access and backbone networks), study of Internet traffic, structure of the Internet, general principles used in the design and evaluation of network protocols.
Pre-requisite: CS440

CE550 Computer Architecture II
3 credit hours (3 hours of lecture)
This course is a continuation of Computer Architecture with advanced topic. The goal of this course is to provide the students with advanced knowledge of computer and processor design and its operation. Students are expected to have some fundamental understanding of computer architecture through CE450. Other than lectures, hands on lab sessions will be provided, and required as part of learning platform. An exemplary MIPS processor is to be studied through state of the art EDA simulation tools. Main learning objective includes pipelining, caching, ALU arithmetic, data path, and control units of a microprocessor. Some understanding of hardware description language, such as Verilog would be helpful for attending this class.
Pre-requisite: CE352 or CE450

CE560 Embedded Computer Systems Design
3 credit hours (3 hours of lecture)
This course demonstrates how to approach the task of developing an embedded software and system for a range of applications based on practical applications. Topics include: the analysis of requirements for system design, the selection of processor hardware, and off-the-shelf components for hardware and software, the use of real-time operating systems, interrupt handlers, multitasking, memory management, data conditioning and programming languages are considered. As the design is implemented in code, another set of tools is used for testing and integration. The use of source level debuggers, in-circuit emulation and choices of host versus target platforms are covered.
Pre-requisite: CE460

CS560 Software Engineering
3 credit hours (3 hours of lecture)
The need to produce efficient, reliable and maintainable software requires the use of engineering principles in specification, creation, verification, validation and management. This course introduces the student to the principles of software engineering as they apply to each stage in the development of a software product. Topics include: software process, requirement engineering, analysis methods, architectural design, component-level design, user interface design, design patterns, software quality assurance, and overview of project management.
Pre-requisite: Graduate Standing

CS561 Software Design and Architecture
3 credit hours (3 hours of lecture)
The study of software architecture is the study of how software systems are designed and built. An architecture-centric approach to software development places an emphasis on design that pervades the activity from the very beginning. Design quality correlates well with software quality. This course covers key facets of software design and architecture as well as how they serve as the intellectual centerpiece of software development. Topics include: design process, connectors, modeling, visualization, analysis, implementation, deployment and mobility, security and trust, architectural adaptation.
Pre-requisite: Graduate Standing

CE562 Embedded Software Design
3 credit hours (3 hours of lecture)
Embedded software is computer software which plays an integral role inside the electronics. Embedded software is usually written for special purpose hardware. This course deals with advanced embedded software programming concepts, interfacing techniques, hardware organization and software development using embedded systems. Topics covered in this course include: embedded device drivers, embedded operating systems, networking, error handling and debugging, hardware and software co-verification, DSP in embedded systems, techniques for embedded processing, development technologies and trends, and practical embedded coding techniques.
Pre-requisite: CE460

CS562 Software Quality Assurance
3 credit hours (3 hours of lecture)
The requirements of high-quality, reliable, predictable software become increasingly necessary as software use continues to grow both generally and in the professional work places. As the software industry evolves, the need for qualified engineers trained in the principles, methodologies, techniques and tools of software quality assurance has grown. This course presents the specifics of software quality assurance and software testing. The course also describes how these processes fit into the software development process. Topics include: unit testing, control flow testing, data flow testing, domain testing, system integration testing, functional testing, system test design, system test planning and automation, system test execution, acceptance testing, and software reliability.
Pre-requisite: CS230 , CS332 or CS430 (or equivalent)

CE570 IC Design
3 credit hours (3 hours of lecture)
This course covers the advanced part of semiconductor IC design. The course topics include transistor theory, transistor characteristics, CMOS fabrication process, layout structure, layout verification, transistor combinational logic, transistor sequential logic, delay calculation, Spice model, memory, and data path design.
Pre-requisite: CE456

CE571 Computer Memory Design
3 credit hours (3 hours of lecture)
The goal of this course is to provide an introduction to the fundamental of basic theory, design implementation, and the applications of various types of computer memory systems and devices. Topics of this course include the evolution of memory devices, functions of memory systems, voltage regulator and redundancy schemes, low power design, error detection & correction, design in reliability, and the hardware implementation of a memory system.
Pre-requisite: CE450

CE572 Embedded Hardware Design
3 credit hours (3 hours of lecture)
Embedded hardware is a computer hardware designed to perform one or a few dedicated functions. Embedded hardware dealing with microprocessor and microcontroller hardware and firmware including processor architecture, advanced memory and I/O systems design, multilevel bus architecture, interrupt systems. Topics covered in this course include: embedded hardware basics, logic circuits, embedded processors, embedded board buses and I/O, memory systems, timing analysis in embedded systems, microcontroller networking, digital interfacing, analog interfacing, interfacing to high current output, and diagnostics.
Pre-requisite: CE460

CE596 Special Topics in Computer Engineering
3 credit hours (3 hours of lecture)
The course covers various subjects of current interest in the field of computer engineering. A student may take this course more than once if topics differ. Topics include: IC Placement and Routing Design, FPGA Design, ASIC Design, and Computer Performance Evaluations.
Pre-requisite: Graduate Standing

CS596 Special Topics in Computer Science
3 credit hours (3 hours of lecture)
This course covers various subjects of current interest in the field of Computer Science. A student may take this course more than once if topics differ. Topics include: object-oriented analysis and design using UML, building E-Commerce application using XML, advanced Java programming, data mining and applications, cloud computing, mobile device programming, .NET programming, web applications, database performance and scalability.
Pre-requisite: Graduate Standing

CE596-001 Digital Design with FPGA's
3 credit hours (3 hours of lecture)
Digital design using FPGAs is a very important activity in industries due to reduced cost, compared with ASIC design, and faster time-to-market. In order to design a digital system using FPGA, the designers must understand the architectures of the FPGA as well the accompanying CAD tools. This hands-on course covers the design of digital systems using Verilog and its implementation on the Xilinx Spartan FPGA. Topics covered in this course include: fundamentals of FPGA architecture, logic elements, interconnect, and I/O pins, combinational and sequential logic design inside FPGA structures, finite state machines, RAM and DSP. Hands-on practices are required.
Pre-requisite: CE452

CE596-002 Parallel Computation Systems
3 credit hours (3 hours of lecture)
The course provides an introduction to the parallel system classifications, parallel processing and the parallel computation models and their algorithms. Topics include performance analysis and modeling of parallel computing, interconnection networks, vector processors, SIMD and MIMD architectures & their hybrid, systolic arrays, data flow architectures, the parallel languages and the parallelizing compilers.
Pre-requisite: CE450

CE596-003 Logic Synthesis
3 credit hours (3 hours of lecture)
The aim of this course is to present logic synthesis techniques for the automation of VLSI circuits and systems. The course will broadly survey the state-of-the-art, and give a detailed study of various problems, pertaining to the logic-level synthesis of VLSI circuits and systems. Topics include: various concepts and methods of logic synthesis, starting from the basics and explaining Synopsys tools and their use in synthesizing hardware design language (HDLs) into net-list. In addition, key aspects of the Synopsys design compiler such as design constraint setup, technology library, design partitioning, compilation strategies, design optimization, sub-design characterization, timing closure and analysis, signal integrity, and library management are discussed.
Pre-requisite: CE452

CE596-004 ASIC CMOS Design
3 credit hours (3 hours of lecture)
This course is designed for students who intend to become ASIC designers using integrated design process. The reasons to design a custom integrated circuit are lower cost, higher performance, higher reliability, lower power, small size, and protection from reverse engineering. Topics covered in this course include: ASIC Library modeling, cell characterization, static timing analysis, place and route algorithms, design for testability, fault modeling, industry standard formats for design information interchange, and a survey of the most popular EDA tools. Industry grade design tools such as Synopsys Design Compiler, Cadence Verilog-XL, Cadence Silicon Ensemble, and Synplicity Synplify are used for homework assignments and projects.
Pre-requisite: CE570

CE596-005 IC Layout Design
3 credit hours (3 hours of lecture)
IC layout design is the process of creating an accurate physical representation of an engineering drawing and is actually the art of drawing transistors and wires in terms of different layers. This course will provide the fundamental aspects of IC layout design such as understanding the concepts, the methodologies, the design flow, and the tools used for layout. This course also includes the intensive hands-on labs using the Cadence tool. Topics include: transistor concept, CMOS theories, basic CMOS process, CMOS logic gates, layout design rules, latch-up prevention concept, ESD theory, resistor & capacitor theory, basic bipolar technology theory, basic analog layout theory, and DRC/LVS verification.
Pre-requisite: CE570

CE596-006 System on Chip (SoC) Design
3 credit hours (3 hours of lecture)
System on a chip (SoC) design has been the predominant processor architecture for modern computer system, and continues to be a leading methodology for many new processor systems. A SoC computer essentially consists of a processor subsystem, a memory subsystem, associated interconnects, and I/O interfaces, all within a signal chip. This course covers SoC design and modeling methodology with emphasis on architectural overview, EDA (Electronic Design Automation) design and verification methods, enabling hardware/software co-development. The essential EDA design tool chains, design verification, RTL simulation, and design implementation (synthesis) will be introduced and studied in this course. Students are expected to have some fundamental understanding of computer architecture, logic design, and assembly language programming. Other than lectures, hands-on lab sessions will be provided and are required as part of the learning platform. An exemplary SoC is to be studied and experimented through state of the art EDA tool chain. Main learning objectives include modern EDA tool methodology, SoC design, verification, and some potential firmware development. Some understanding of hardware description language such as Verilog would be helpful for this class.
Pre-requisites: *CE452, CE450, or CE550*
Hardware Description Language –Verilog

CE596-007 Real Time Computer System
3 credit hours (3 hours of lecture)
Real time system is the study of hardware and software systems that are subject to operational deadlines from event to system. This course provides the characteristics, hardware and software aspects of real time systems; design of real time systems; application programs, files, databases and operating systems for real time systems; testing and debugging of real time systems. Topics covered in this course include: a review of embedded system design, the concept of real-time systems, real-time specification and design techniques, real-time kernels, system performance analysis, memory management, task management, time management, synchronization of inter-task communication, queuing models, real-time operating system tools for embedded systems, and real-time programming examples. Hands-on exercises are required.
Pre-requisite: CE460

CE596-008 IC Placement and Routing Design
3 credit hours (3 hours of lecture)
This course will cover the fundamentals of placement and routing (P&R) flow, such as the knowledge of P&R role, the generation of process technology and LEF files, and also cover the basic concepts for floor/power planning, placement, DEF files, clock tree generation, routing, RC extraction, timing analysis, and ECO flow. This course also includes hands-on laboratory session by using the Cadence SoC Encounter tool.
Pre-requisite: CE570

CE596-009 Nanotechnology
3 credit hours (3 hours of lecture)
This course provides an overview of the key elements of physics, biology, and engineering related to the basic nanotechnology concept. It also addresses the fundamental scientific and technological underpinnings of the important new field of nanotechnology used in various areas. Topics include: quantum theory, nano-electronics and materials, and the applications applied to the various fields such as defense systems, body health, medicine, security systems, and current green technology.
Pre-requisite: PHY202 or equivalent

CS596-011 Web Data Mining
3 credit hours (3 hours of lecture)
Introduction to data mining, data pre-processing; Association rules and sequential patterns, Supervised learning (classification), Unsupervised learning (clustering), Partially supervised learning, Information retrieval and Web search, Basic text processing and representation, Cosine similarity, Social network analysis, Page rank algorithm (of Google), Mining communities on the Web, Web crawling, Web Data extraction and information integration, Opinion mining and sentiment analysis and Web usage mining.
Pre-requisite: Graduate Standing

CS596-014 Business Intelligence and Data Warehousing
3 credit hours (3 hours of lecture)
This course is designed for graduate students (majoring in either Computer Science or Business) who wish to become familiar with Data Warehouse and Business Intelligence technology and its role in the enterprise. Topics include: Data Warehouse design, development, and management, Data pre-processing and cleansing, Business analytics (OLAP), cubes, reports, and predictive analytics, Principals for data, text and web mining for Business Intelligence, mining frequent patterns including associations, correlations, classification and prediction. In addition, the course covers cluster analysis for unstructured data, and future trends in Business Intelligence.
Pre-requisite: BA515 and CS520

CS596-015 Cloud Computing
3 credit hours (3 hours of lecture)
This course is designed for graduate students in Computer Science who wishes to become familiar with Cloud Computing and its impact on the Data center. Topics covered include: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). The course covers case studies for popular Cloud Computing offerings, and we conclude with Mobile and cloud computing overview.
Pre-requisite: Background in data management and Web-based applications development.

CS596-018 Computer Performance Evaluation
3 credit hours (3 hours of lecture)
Measurement and evaluation of computer performance. Workload characterization. Analysis of computer systems via simulation, and queue theoretic models. Learn the art of simulating computing systems via random variety generation, and discrete event techniques. Closed and open queuing computing systems. Operational and mean value analysis. Bottleneck analysis.
Pre-requisite: MATH 200 and MATH 210

CS596-019 J2EE Programming
3 credit hours (3 hours of lecture)
The course covers the different client-server programming paradigms in the context of the web and internet. Also, the course covers the evolution of application development from object- oriented to component-based paradigm to Frameworks. The rest of the course covers two examples to understand as applications to the above architecture two example paradigms: CORBA (Object-oriented paradigm) and Java Enterprise Edition (JEE: example of component-based application paradigm).
Pre-requisite: CS332 or CS430

CS596-023 Wireless Communication and Networks
3 credit hours (3 hours of lecture)
This course is an introduction to wireless communication. Topics include: Transmission fundamentals, Communication networks, protocols and the TCP / IP suite, Antennas and wave propagation, Signal encoding techniques, Spread spectrum, coding and error control, Satellite communication, Cellular wireless networks, Cordless systems and Wireless Local Loop. Mobile IP and Wireless Access Protocol, Wireless LAN technology, IEEE 802.11 Wireless LAN standard, and Bluetooth will also be covered.
Pre-requisite: None

CS596-024 Data Mining and Big Data
3 credit hours (3 hours of lecture)
Students will learn different data mining techniques including OLAP and hands-on experience with Data Mining with SQL Server 2008. In addition, the course covers Big Data including: what is Big Data, why Big Data matters, Big Data and the business case, Big data sources, Big data details, and security/compliance/auditing/protection, and best practices for Big Data Analytics. Finally, we survey available open source technologies/tools in the Apache Hadoop including: Ambari, Cassandra, HBase, Hive, Pig, Mahout, and Zookeeper. Finally, brief overview of the R Statistical Programming Language.
Pre-requisite:CS420 or CS520. Background about SQL Server is a plus.

CS596-025 Theory of Computation
3 credit hours (3 hours of lecture)
The course has four main parts. The first part briefly covers discrete mathematics used in computer science. The second part consists of automata and languages. Regular and context free languages are covered in it. The third part consists of computability theory. It consists of Church-Turing thesis, decidability, reducibility, and some advanced topics in computability theory. The fourth part consists of complexity theory. It consists of time and space complexity, intractability, and some advanced topics in complexity theory.
Pre-requisite: MATH200, MATH206, CS200.

CS596-026 OpenStack Cloud Architecture
3 credit hours (3 hours of lecture)
This OpenStack Cloud Architecture course provides practical knowledge around fundamental OpenStack components such as Compute (Nova), Image Service (Glance), Identity (Keystone), Block Storage (Cinder) and Dashboard (Horizon). In addition, to make this course as complete and relevant as possible, we also cover several OpenStack building blocks used for object storage, networking, monitoring and orchestration.
Pre-requisite: None

CS596-027 Software Defined Networking
3 credit hours (3 hours of lecture)
This course is a comprehensive technical introduction to the increasingly important and exciting field of computer networking. It covers the theory and practice of essential computer network hardware, architecture and protocols. Topics include: signal transmission; Fourier analysis, modulation, and multiplexing; OSI reference model; Media Access Control; error detection; flow control; error control; congestion control; routing and network applications.
Pre-requisite: CS440
Co-Requisite: None

CS596-029 Machine Learning and Data Mining
3 credit hours (3 hours of lecture)
The course covers the fundamental concepts in Machine Learning theories, including Probability, Bayes Estimate, Decision Trees, Support Vector Machine, Supervised and Unsupervised Learning, etc. The course also discusses applying machine learning and Python tools to solve problems in data mining.
Pre-requisite: Graduate Standing

CS596-032 Data Science
3 credit hours (3 hours of lecture)
The course covers the fundamental concepts in Data Science, including data capturing, data cleaning, data analysis, data mining, and data visualization. The course also includes introduction to both Python and R programming languages as the tools and examples for implementing some of the theories.
Pre-requisite: Graduate Standing

CE598 Graduate Project
3 credit hours (3 contact hours)
CE598 is a supervised development, analysis, and/or research in the field of Computer Engineering. To initiate an undergraduate project, the student should set up a counseling session with a potential project instructor to define the project objective, scope, and progress check points. In general, the student should meet with his or her instructor at least biweekly and submit a formal report and presentation for discussion and evaluation. Upon completion, and with the instructor's approval, a final report shall be submitted to CE department and a formal project presentation shall be presented to the department.
Pre-requisite: Graduate Standing

CS598 Graduate Project
3 credit hours (3 hours of lecture)
CS598 is a supervised development, analysis, and/or research in the field of concentration A or B. Basic requirements for a graduate project are: (1) it is an independent effort, and (2) represents either significant effort or significant technical contribution.
(To initiate an undergraduate project, the student should set up a counseling session with a potential project instructor to define the project objective, scope, and progress check points. In general, the student should meet with his or her instructor at least biweekly and submit a formal report and presentation for discussion and evaluation. Upon completion, and with the instructor's approval, a final report shall be submitted to CS department and a formal project presentation shall be presented to the department.)
Pre-requisite: Graduate Standing

CE599 Independent Study
3 credit hours (3 contact hours)
Independent study tailored to a student's special interest in computer 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.
Pre-requisite: Graduate Standing

CS599 Independent Study
3 credit hours (3 contact hours)
Independent study tailored to a student's special interest in computer science 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.
Pre-requisite: Graduate Standing

DCE ADVANCED CONCENTRATION COURSES

CS600 Advanced Operating Systems
3 credit hours (3 hours of lecture)
This course covers advanced topics in operating system design and implementation. This course is intended to help students understand the following topics: Microkernals, Naming, Caching Techniques, Advanced Dynamic Memory Management, Synchronization and Ordering of Events, Process Migration, Protection and Security, Fault Tolerance, Virtual Machines, and MapReduce Architecture. In addition, the course is intended to help students improve their presentation skills and formal writing skills. Students will be divided into small groups, and each group will be presenting and writing a paper covering one of the topics relating to Distributed Operating Systems in the research community. List of Journal, Conference, and University Technical Reports, for both class discussions, and the group presentation/papers, are provided at the end of course syllabus. The final examination will review papers covered in the class as well as in the group presentations.
Pre-requisite: CS500

CS602 Advanced Design and Analysis of Algorithms
3 credit hours (3 hours of lecture)
This course focuses on effective key algorithms using graphs and network applications. The course covers in-depth algorithmic design, analysis and programming implementation aspects and requires students' hands-on experience and research.
Pre-requisite: CS502

CS610 Advanced Database Systems
3 credit hours (3 hours of lecture)
This course covers advanced topics in Database system design and implementation. The course is intended to help the students understand the following advanced topics including: Storage and Indexes, Query processing, Query Optimization, Concurrency Control, Transaction Management, Recovery, Data Warehouse, OLAP and Data Mining, Parallel and Distributed database, and XML and XQuery.
Pre-requisite: CS520

CS620 Advanced Database System and Application
3 credit hours (3 hours of lecture)
This course covers advanced topics in Database system design and implementation. The course is intended to help the students understand the following advanced topics including: Storage and Indexes, Query Processing, Query Optimization, Concurrency Control, Transaction Management, Recovery, Data Warehouse, OLAP and Data Mining, Parallel and Distributed Database, and XML and XQuery. In addition, the course is intended to help students improve their presentation skills and formal writing skills. Students will be divided into small groups. Each group will be assigned a topic from the advanced research topics in the research community listed below. Each group will write a formal paper about their assigned topic and give a presentation to the class describing the problem, what others have discovered, and the students' own views. List of publications in the relevant topics are provided at the end of the course syllabus. The students are encouraged to research additional published papers on their topic. The final examination will cover both material covered in the class as well as the presentations given by the different groups in the class.
Pre-requisite: CS520

CS621 Distributed and Parallel Database Systems
3 credit hours (3 hours of lecture)
This course covers fundamental and current research topics in the design, implementation, and evaluation of parallel and distributed database systems. The focus will be on the systems software and parallel programming systems, but some hardware issues will also be covered. Topics will include Parallel Computers and Algorithms, Message-Passing Computing, Parallel Computations. Partitioning and Divide-and-Conquer Strategies, Pipelined Computations, Synchronous Computations, Load Balancing and Termination Detection, Programming with Shared Memory, Distributed Shared Memory Systems and Programming, Parallelization Strategies, Distributed Shared Memory, and related ideas, System Area Networks (SAN), and Operating System Support. Most topics will relate to the practical and hands-on aspects of parallel programming.
Pre-requisite: CS520 (or equivalent)

CS622 Advanced Business Intelligence and Analytics
3 credit hours (3 hours of lecture)
This course covers advanced topics in Business Intelligence (BI) and Analytics with hands-on experience. Topics covered include: (1) Data Warehouse architecture including Star schema, and On Line Analytical Processing (OLAP), (2) The BI stack using Pentaho as a case study and covering meta-data, reporting tools, Visualization, (3) Data mining algorithms, including classifications, clustering, mining frequent patterns and others and how this technology relates to Business Intelligence, (4) Data Mining using WEKA as a case study and covering classification, clustering, and mining Frequent Patterns, (5) Overview of the R Statistical Programming Language for Analytics support. Students will be divided into small groups to practice the new computing skills with hands-on experience. Each group will develop one application with data mining using WEKA and another project with Business Intelligence using Pentaho. The Pentaho-based project replaces the Final. In addition, the course will include a midterm that covers the lecture material covered in the class.
Pre-requisite: CS520

CS624 Data Mining and Big Data
3 credit hours (3 hours of lecture)
Students will learn different data mining techniques including OLAP and hands-on experience with Data Mining with SQL Server 2008. In addition, the course covers Big Data including: what is Big Data, why Big Data matters, Big Data and the business case, Big data sources, Big data details, and security / compliance / auditing / protection, and best practices for Big Data Analytics. Finally, we survey available open source technologies/tools in the Apache Hadoop including: Ambari, Cassandra, HBase, Hive, Pig, Mahout, and Zookeeper. Finally, brief overview of the R Statistical programming Language.
Pre-requisite: CS420 or CS520. Background about SQL Server is a plus.

CS640 Advanced Network System Development
3 credit hours (3 hours of lecture)
This course puts a major emphasis on router/switch architectures and algorithms. Students will study algorithms used by modern routers to do forwarding, address lookups, switching, scheduling, flow classification, flow monitoring and measurements, etc. The course begins by discussing the networking bottlenecks that are most often encountered at four disparate levels of implementation: Protocol, OS, Hardware, and Architecture. The rest of the course is devoted to a systematic application of the optimization principles to bottlenecks found specifically in end nodes, interconnect devices, and specialty functions such as security and measurement that can be located anywhere along the network.
Pre-requisite: CS540

CE650 Advanced Computer Architecture
3 credit hours (3 hours of lecture)
This is an advanced level computer architecture course that will address the following issues: (1) Instruction level parallelism, (2) Advanced techniques in memory hierarchy design, (3) Advanced Input/Output analysis, (4) Multimedia processing and (6) Security support. These are the salient research topics in the field of computer architecture.
Pre-requisite: CE550

CE651 Parallel Computer Architecture
3 credit hours (3 hours of lecture)
For a variety of reasons, parallel computer architecture has recently become one of the most challenging and important areas in Computer Engineering and Software Development. It is therefore very important for the students to learn the concepts of parallel computing hardware design and software programming paradigm. The topics covered in this course include: shared memory multiprocessors, scalable processors, cache coherence, snoop based multiprocessor design, HW/SW tradeoffs, interconnection network, VLIW architecture and latency tolerance.
Pre-requisite: CE450

CS660 Advanced Software Engineering
3 credit hours (3 hours of lecture)
This course is a graduate-level software engineering course. With a basic knowledge of software engineering principles, we will explore advanced specification and design in UML, component-based software engineering, rapid development processes and techniques, advanced validation and verification methods, configuration management, and other advanced topics.
Pre-requisite: CS560

CE671 Advanced VLSI Physical Design
3 credit hours (3 hours of lecture)
This course covers all aspects of physical design such as VLSI design cycle, physical design cycle, physical design and packaging styles, fabrication process for VLSI devices, process impacts on physical design, basic algorithms for floor planning, partitioning, placement, global routing, detailed routing, clock tree synthesis, and also topics for physical design automation, timing/power/delay analysis, and design verification.
Pre-requisite: CE596-005

CE672 Advanced ASIC Chip Synthesis
3 credit hours (3 hours of lecture)
This course introduces the advanced concept and techniques used toward deep-sub-micro Application-Specific Integrated Circuit (ASIC) design. Student will be trained to design a high-level micro-processor core by using logic synthesis with designated advanced cell library, and to close timing on static timing tools. Additional trainings may include design vs. compiled circuit checking with Formality, and the use of Signal Integrity.
Pre-requisite: CE570

CE697 Research Seminar
1 credit hour (1 hour of lecture)
This course is designed for doctoral students who have passed the qualifying examination and are preparing for research work. The preparation of a research plan and how to write a research proposal will be covered in this course. The students will be exposed to a series of seminars given by invited speakers from academics, industry and business sectors with broad range of topics to advance their knowledge in the DCE concentration area.
Pre-requisite: Doctoral Candidate

CE698 Doctoral Research I
6 credit hours (6 hours of lecture and discussion)
This course is designed for doctoral students after advancing to doctoral candidacy to pursue their research interests. The candidate is advised to choose a research topic and prepare the research proposal that is approved by the Doctoral Research Committee. The candidate is required to present the research results to the oral defense committee after completing the thesis work.
Pre-requisite: Doctoral Candidate

CE699 Doctoral Research II
6 credit hours (6 hours of lecture and discussion)
This course is designed for doctoral students after advancing to doctoral candidacy to pursue their research interests. The candidate is advised to choose a research topic and prepare the research proposal that is approved by the Doctoral Research Committee. The candidate is required to present the research results to the oral defense committee after completing the thesis work.
Pre-requisite: Doctoral Candidate

BUSINESS ADMINISTRATION UNDERGRADUATE COURSES

BA300 Fundamentals of Accounting
3 credit hours (3 hours of lecture)
This course covers basic accounting theory and techniques. Principles are applied to accumulating and summarizing financial data, and critical analysis and interpretation of financial statements. Fundamentals of accounting concepts is designed for students desiring a general knowledge of accounting. Emphasis is placed on the use and analysis of accounting data.
Pre-requisite: None
Co-requisite: BA300L

BA300L Fundamentals of Accounting Lab
1 credit hour (2 hours of lab)
This course is designed for concurrent enrollment in BA300 in order to provide and enhance hands-on experiences of accounting principles. Popular accounting software tools will be used to complete homework assignments and projects.
Pre-requisite: None
Co-requisite: BA300

BA301 Intermediate Accounting I
3 credit hours (3 hours of lecture)
This course will cover an in-depth study of financial accounting concepts and practices, including information processing, valuation, statement presentation, and analysis. Emerging issues and professional accounting standards are also studied.
Pre-requisite: BA300
Co-requisite: BA301L

BA301L Intermediate Accounting I Lab
1 credit hour (2 hours of lab)
This course is designed for concurrent enrollment in BA301 in order to provide and enhance hands-on experiences of accounting principles. Popular accounting software tools will be used to complete homework assignments and projects.
Pre-requisite: BA300
Co-requisite: BA301

BA302 Accounting for Management Decision Making
3 credit hours (3 hours of lecture)
This course teaches the use of accounting information for managerial planning, control, and decision-making. Topics include: costing systems, cost estimation and analysis, operational and capital budgeting decisions.
Pre-requisite: BA300
Co-requisite: BA302L

BA302L Accounting for Management Decision Making Lab
1 credit hour (2 hours of lab)
This lab course is designed to be taken with BA302. Through lab exercises, students will gain hands-on experience in using accounting information for managerial planning, control, and decision-making. Topics include: costing systems, cost estimation and analysis, operational and capital budgeting decisions.
Pre-requisite: BA300
Co-requisite: BA302

BA320 Cash Management
3 credit hours (3 hours of lecture)
This course covers principles of cash management in a corporate finance setting with a focus on financial accounting, the collection cycle, electronic commerce, information technology, investment strategies, debt, international business effect cash management, and yield curve analysis.
Pre-requisite: BA300

BA352 Discovering Business
3 credit hours (3 hours of lecture)
This course provides students with an overview of today's business environment. Students will learn about a global working perspective that includes the role of industry and its impact on our culture to the various key business functions and how they interact in the competitive and ever-changing economy. Emphasis is on the real world and practical application of concepts and theories through lecture, discussion, and group interactions.
Pre-requisite: None

BA354 Negotiation
3 credit hours (3 hours of lecture)
This course covers principles and practice in business negotiations. Topics include negotiating: concepts, strategies, situational applications, and practice in applied techniques. Situations range from negotiation in sales and customer relations to employee management and career development.
Pre-requisite: None

BA380 Introduction to Quantitative Methods in Business
3 credit hours (3 hours of lecture)
The course includes a survey of linear programming, transportation models, CPM/PERT, deterministic inventory models, and decision analysis, with emphasis on problem formulation and solving using these techniques.
Pre-requisite: MATH202

BA401 Intermediate Accounting II
3 credit hours (3 hours of lecture)
This course will cover in-depth study of advanced financial accounting concepts and practices, measurement, valuation, disclosure, and analysis. It will also include research of emerging issues and professional accounting standards.
Pre-requisite: BA301
Co-requisite: BA401L

BA401L Intermediate Accounting II Lab
1 credit hour (2 hours of lab)
This course is designed for concurrent enrollment in BA401 in order to provide and enhance hands-on experiences of accounting principles. Popular accounting software tools will be used to complete homework assignments and projects.
Pre-requisite: BA301
Co-requisite: BA401

BA410 Enterprise Information Systems
3 credit hours (3 hours of lecture)
This course focuses on enterprise-level information systems, technologies, and infrastructures used by large organizations. This course will provide students with the fundamental knowledge associated with the managerial, technological, and organizational issues of enterprise-wide information systems. The course will also introduce personnel issues related to such enterprise-wide information systems and information systems that extend beyond the traditional organizational boundaries, including project management of a team. Course topics include: introduction to enterprise systems, enterprise systems architecture, systems integration, enterprise-wide information systems development life cycle, implementation strategies, software and vendor selection, pre- and post-implementation, project management (PM), organizational change and business process management systems (BPM); global, ethics, and security management issues; supply chain management systems (SCM); and customer relationship management (CRM) systems, SAP ERP or Oracle E-Business Suite.
Pre-requisite: CS200
Co-requisite: BA410L

BA410L Enterprise Information Systems Lab
1 credit hour (2 hours of lab)
This course is designed for concurrent enrollment in BA401 in order to provide and enhance hands-on experiences of information system. Popular ERP software tools, such as SAP or Oracle E-Business Suite will be used to complete homework assignments and projects.
Pre-requisite: CS200
Co-requisite: BA410

BA430 Financial Management
3 credit hours (3 hours of lecture)
Emphasis will be placed upon being able to understand financial information, values, and cash flows. Evaluating investment projects, quantifying relevant risk, assessing cost of capital, developing dividend policy, and determining the optimal capital structure to solve real business problems faced by companies. The course approach will focus on basic theoretical concepts and their application.
Pre-requisite: None

BA431 Introduction to Corporate Finance
3 credit hours (3 hours of lecture)
Develop a basic foundation of financial management and corporate finance. Emphasis will be placed upon being able to understand financial information, value cash flows, evaluate investment projects, quantify relevant risk, assess the cost of capital, develop dividend policy, and determine optimal capital structure in order solve real business problems faced by companies. The course approach will focus on basic theoretical concepts and their application.
Pre-requisite: BA430

BA432 Introduction to Investment Analysis
3 credit hours (3 hours of lecture)
This course is an introduction to security analysis and portfolio management. Topics include types of financial markets, valuation of financial assets, and diversification for portfolio management.
Pre-requisite: BA430

BA433 Financial Reporting and Analysis
3 credit hours (3 hours of lecture)
This course focuses on financial accounting, which provides financial information primarily for decision-makers outside the entity. This financial information is provided to external decision-makers primarily by means of general-purpose statements of operating results, financial position, and cash flow. The course concentrates on the application of accounting theory, standards, principles, and procedures to business transactions. The fundamental rationales for the various aspects of financial accounting are stressed.
Pre-requisite: BA431

BA440 Management Principles
3 credit hours (3 hours of lecture)
This course presents a thorough and systematic coverage of management theory and practice. It focuses on the basic roles, skills and functions of management, with special attention to managerial responsibility for effective and efficient achievement of goals. Special attention is given to social responsibility, managerial ethics, and the importance of multi-national organizations.
Pre-requisite: Upper Division Standing

BA442 Human Resource Management
3 credit hours (3 hours of lecture)
This course provides a framework for understanding and thinking strategically about the management of human resources in organizations. Topics include: recruitment and selection, compensation and benefits, promotion, training, performance appraisal, retention and turnover, and selected public policy issues pertaining to employment (e.g. discrimination and affirmative action). Special topics covered in this course include strategic human resource planning, job analysis and work design, legal aspects of strategic HRM, recruitment and selection, training and development, performance appraisal, strategic compensation and benefits decisions, and employee rights and disciplines. ERP tools or E Business Suite will be utilized in this course.
Pre-requisite: BA410

BA445 Organizational Theory & Behavior
3 credit hours (3 hours of lecture)
This course offers a survey of behavior within and outside of organizations. It covers issues of individual behavior, interpersonal communication and influence, group dynamics, inter-group relations, complex organizational structure and behavior, and relations between organizations and environments. The course addresses the ways in which organizations and their members affect one another. Issues of motivation, task design, leadership, communication, organizational design, and innovation will be analyzed.
Pre-requisite: Upper Division Standing

BA452 Operations Management
3 credit hours (3 hours of lecture)
This course will provide students with methodologies and skills of how to manage the efficient transformation of inputs into outputs to effectively satisfy customers. Inputs are materials, labor, capital and management. Outputs are products or services, which customers often pay for daily control of business processes. Topics covered include: explanation of the role of operations and interaction with other activities of a firm, how operations affect people and society, excitement and creativity associated with managing operations, analyzing operation processes from various perspectives including efficiency, responsiveness, and productivity.
Pre-requisite: BA410 and BA440

BA460 Marketing Management
3 credit hours (3 hour of lecture)
The course analyzes the substantive and procedural aspects of marketing management, and sharpens skills for critical analytical thinking and effective communication. Emphasis will be placed on the evolution of contemporary marketing strategies and the elements of marketing: customer analysis, pricing, distribution channels, competitive analysis, and branding. The development of a marketing plan along with segmentation analysis will be important concerns. The changing role of the customer and planning strategies will also be addressed. The class provides students a forum for presenting and defending their own recommendation and critically examining and discussing those of others. CRM issues will be addressed.
Pre-requisite: Upper Division Standing

BA461 Business Communications
3 credit hours (3 hours of lecture)
This course examines the various facets of communication in the workplace. It covers critical areas in business from memos and emails, to grammar, punctuation, ethics, vocabulary, resumes and cover letters. Equally important emphasis in public speaking, verbal and nonverbal communication in an office environment. The course will also help to guide and improve career goals and map for students.
Pre-requisite: Upper Division Standing

BA462 Consumer Behavior
3 credit hours (3 hours of lecture)
The course covers a survey of theoretical foundations of consumer decision-making; in-depth analysis of contemporary factors influencing consumer behavior in social, cultural, and psychological dimensions. Assignments include extensive outside classroom readings, case applications, and student projects.
Pre-requisite: Upper Division Standing

BA463 Sales Management
3 credit hours (3 hours of lecture)
This course is offered for technical and business professionals who want to learn the buying and selling processes that corporations use in business-to-business transactions. Emphasis is on the concept of solution selling, improving value, and meeting the needs of clients through effective questioning, analysis, sales planning and presentations. Students learn the major phases of the value added sales process, setting sales objectives for each phase, analyzing client needs, designing a value-added sales approach, presenting solutions, and handling objections.
Pre-requisite: Upper Division Standing

BA464 Marketing & e-Commerce
3 credit hours (3 hours of lecture)
This course provides an 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.
Pre-requisite: Upper Division Standing

BA470 International Marketing
3 credit hours (3 hours of lecture)
This course teaches systematic treatment of marketing on a global scale. Topics include the analysis of global market environments, targeting and entry strategies for global markets, sourcing and global production strategy, the global marketing mix, and strategies to manage global marketing. The perspective of the course is from a managerial point of view. This course will prepare students to successfully organize global opportunities and efficiently handle global threats in domestic markets.
Pre-requisite: BA460

BA481 Business Law
3 credit hours (3 hours of lecture)
This class is intended to inform and educate business students of the legal requirements and risks associated with managing, owning and operating a high tech business in today's global economy.
Pre-requisite: Upper Division Standing

BA496 Special Topics in Business Administration
3 credit hours (3 hours of lecture)
This course provides an opportunity for a faculty member to teach a relatively new subject that is not listed in the catalog, but is greatly relevant to business administration. The course consists of lectures, reading assignments, and a project presentation. Topics are determined by the instructor.
Pre-requisite: Upper Division Standing

BA496-001 MBA Preparatory: Accounting
3 credit hours (3 hours of lecture)
This course teaches the use of accounting information for managerial planning, control, and decision-making. Topics include: costing systems, cost estimation and analysis, operational and capital budgeting decisions. This course covers basic accounting theory and techniques. Principles are applied to accumulating and summarizing financial data, and critical analysis and interpretation of financial statements. Fundamentals of accounting concepts are designed for students desiring a general knowledge of accounting. Emphasis is placed on the use and analysis of accounting data.
Pre-requisite: None
Co-requisite: BA496L-001

BA496L-001 MBA Preparatory: Accounting Lab
1 credit hour (2 hours of lab)
This course teaches the use of accounting information for managerial planning, control, and decision-making. Topics include: costing systems, cost estimation and analysis, operational and capital budgeting decisions. This course covers basic accounting theory and techniques. Principles are applied to accumulating and summarizing financial data, and critical analysis and interpretation of financial statements. Fundamentals of accounting concepts are designed for students desiring a general knowledge of accounting. Emphasis is placed on the use and analysis of accounting data.
Pre-requisite: None
Co-requisite: BA49-001

BA496-002 MBA Preparatory: Quantitative Methods
3 credit hours (3 hours of lecture)
The course includes a survey of linear programming, transportation models, CPM/PERT, deterministic inventory models, and decision analysis, with emphasis on problem formulation and its solution using different statistical and probabilistic techniques.
Pre-requisite: MATH202

BA499 Independent Study
1-3 credit hours (1-3 contact hours)
Independent study is tailored to a student's 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.
Pre-requisite: Upper Division Standing

BUSINESS ADMINISTRATION GRADUATE COURSES

BA410 Enterprise Information Systems
3 credit hours (3 hours of lecture)
This course focuses on enterprise-level information systems, technologies, and infrastructures used by large organizations. This course will provide students with the fundamental knowledge associated with the managerial, technological, and organizational issues of enterprise-wide information systems. The course will also introduce personnel issues related to such enterprise-wide information systems and information systems that extend beyond the traditional organizational boundaries, including project management of a team. Course topics include: introduction to enterprise systems, enterprise systems architecture, systems integration, enterprise-wide information systems development life cycle, implementation strategies, software and vendor selection, pre- and post-implementation, project management (PM), organizational change and business process management systems (BPM); global, ethics, and security management issues; supply chain management systems (SCM); and customer relationship management (CRM) systems, SAP ERP or Oracle E-Business Suite.
Pre-requisite: CS200
Co-requisite: BA410L

BA410L Enterprise Information Systems Lab
1 credit hour (2 hours of lab)
This course is designed for concurrent enrollment in BA401 in order to provide and enhance hands-on experiences of information system. Popular ERP software tools, such as SAP or Oracle E-Business Suite will be used to complete homework assignments and projects.
Pre-requisite: CS200
Co-requisite: BA410

BA430 Financial Management
3 credit hours (3 hours of lecture)
Emphasis will be placed upon being able to understand financial information value cash flows, evaluate investment projects, quantify relevant risk, assess the cost of capital, develop dividend policy, and determine optimal capital structure in order to solve real business problems faced by companies. The course approach will focus on basic theoretical concepts and their application.
Pre-requisite: Graduate Standing

BA442 Human Resource Management
3 credit Hours (3 hours of lecture)
This course provides a framework for understanding and thinking strategically about the management of human resources in organizations. Topics include: recruitment and selection, compensation and benefits, promotion, training, performance appraisal, retention and turnover, and selected public policy issues pertaining to employment (e.g. discrimination and affirmative action). Special topics covered in this course include strategic human resource planning, job analysis and work design, legal aspects of strategic HRM, recruitment and selection, training and development, performance appraisal, strategic compensation and benefits decisions, and employee rights and disciplines. ERP tools or E Business Suite will be utilized in this course.
Pre-requisite: BA410

BA452 Operations Management
3 Credit Hours (3 hours of lecture)
This course will provide students with methodologies and skills of how to manage the efficient transformation of inputs into outputs to effectively satisfy customers. Inputs are materials, labor, capital and management. Outputs are products or services, which customers want and often pay for to maintain daily control of business processes. Topics include: the role of operations and their interaction with other activities of a firm, how operations affect people and society, appreciating the challenge, excitement and creativity associated with managing operations, analyze operation processes from various perspectives such as efficiency, responsiveness, quality and productivity, learn basic but useful analytical skills and tools, such as SAP ERP or Oracle E-Business Suite in studying operations in a company.
Pre-requisite: BA410 and BA440

BA496-001 MBA Preparatory: Accounting
3 credit hours (3 hours of lecture)
Course description: This course covers accounting theory and techniques, including an in-depth study of financial accounting concepts and principals. Principles are applied to critical analysis, interpreting financial data, reporting financial data, and analyzing financial statements. Emerging issues and professional accounting standards are also studied.
Pre-requisite: None

BA496-002 MBA Preparatory: Quantitative Methods
3 credit hours (3 hours of lecture)
The course includes a survey of linear programming, transportation models, CPM/PERT, deterministic inventory models, and decision analysis, with emphasis on problem formulation and its solution using different statistical and probabilistic techniques.
Pre-requisite: MATH202

BA500 Financial Accounting
3 credit hours (3 hours of lecture)
Accounting is an essential aspect of every business institution and origination. This course will introduce students to the basic accounting equation, and how accounting decisions effect an organization. Primary areas of study will include debits and credits, accounts, the accounting cycle, accruals and deferrals, common assets, liabilities and owners' equity, and the preparation of financial statements.
Pre-requisite: BA300

BA501 Intermediate Financial Accounting
3 credit hours (3 hours of lecture)
This course is an in-depth study of the principles and procedures underlying external financial reporting. Topics to be covered are review of the accounting cycle and preparation of financial statements. It analyzes accounting for assets, liabilities, revenues, and equities.
Pre-requisite: BA500

BA502 Corporate Accounting
3 credit hours (3 hours of lecture)
This course will enhance the ability of the students to reconstruct economic events from corporate financial statements. It will help in developing a set of principles and concepts, which provides a framework for analyzing various accounting and financing issues.
Pre-requisite: BA500

BA504 Tax Accounting
3 credit hours (3 hours of lecture)
This course is an introduction to the fundamentals of federal taxation as they apply to tax entities including individuals, corporations, and partnerships. Primary emphasis is on the taxation of individuals with some issues on business activities including property transactions, the taxation of corporations and flow-through tax entities. The course includes expanded coverage of tax research and planning as well as ethical responsibilities in tax practice.
Pre-requisite: Graduate Standing

BA505 Managerial Accounting
3 credit hours (3 hours of lecture)
Managerial accounting studies the generational, communication, and interpretation of internal information, both financial and non-financial, for operational and strategic decision-making purposes. In this course, we will study how managers can use this information to implement plans and improve the process of providing goods and services to customers. We will also determine that the accounting information generated for financial reporting purposes is not particularly helpful when managers need to make decisions. The scope of the course embraces the use of accounting information for planning and control purposes in both operational and strategic decision-making.
Pre-requisite: BA500

BA514 Business Intelligence and Data Warehousing
3 credit Hours (3 hours of lecture)
This course is designed for graduate students (majoring in either Computer Science or Business) who wish to become familiar with Data Warehouse and Business Intelligence technology and its role in the enterprise. Topics include: Data Warehouse design, development, and management, Data pre-processing and cleansing, Business analytics (OLAP), cubes, reports, and predictive analytics, Principals for data, text and web mining for Business Intelligence, mining frequent patterns including associations, correlations, classification and prediction. In addition, the course covers cluster analysis for unstructured data, and future trends in Business Intelligence.
Pre-requisite: BA515 and CS520

BA515 Enterprise Resources Planning (ERP)
3 credit Hours (3 hours of lecture)
This course covers concepts in enterprise resource planning (ERP). The main focus of this course is to show how ERP systems integrate business processes across functional areas and support business management and performance analysis.This course will also examine how an ERP system is utilized for business applications, and will evaluate the costs and benefits of implementing an ERP system. Software such as QuickBooks Pro 2015 and Intacct Financials will be used to demonstrate and amplify the course concepts.
Pre-requisite: Graduate Standing

BA521 Macroeconomic Theory
3 credit hours (3 hours of lecture)
This course analyzes what determines 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 in the aggregate, how to interpret, analyze, and operate within a changing macroeconomic environment.
Pre-requisite: Graduate Standing

BA522 Microeconomics for Business Decisions
3 credit hours (3 hours of lecture)
This course covers analysis of managerial economics for demand, cost, production and pricing at the individual firm or industry's level under market structure and the regulatory environment. Emphasis will be placed on applications as well as theory.
Pre-requisite: Graduate Standing

BA526 Time Series Data Analysis
3 credit hours (3 hours of lecture)
This course is designed for graduate students in business, science and engineering fields to gain knowledge of time series data analysis and forecasting methods. The smoothing procedures and regression with time series errors that reveal the underlying components of the data which plays an important role in forecasting and inference are covered in this course. Methods of assessing goodness-of-fit are also included. Important topics covered in this course include: ARCH and GARCH models which are widely used in the financial time series modeling, ARMA and ARIMA forecasting processes, stationary processes, multivariate time series and state space models and generalized state-space models with applications to time series of count data.
Pre-requisite: BA585

BA528 Quantitative Research and Analysis
3 credit hours (3 hours of lecture)
This course is designed for advanced graduate students in Science, Engineering or Business fields to introduce the concepts and methods of regression analysis for discovering the relationships among variables. Regression methods can be used to build up system models to predict their behavior. It also can be utilized to provide a direction in selecting best regression model, analyzing fitting bias and variances. Topics include: Simple Linear Regression Models, Diagnostics and Remedial Measure, Multiple Linear Regression Models, Transformations in Multiple Linear Regression, Selection of Regressors, Logistic Regression, Generalized Linear Models, Maximum Likelihood Estimation, Time Series Regression, Generalized Least Square Regression, Robust Regression and Non-linear Regression.
Pre-requisite: BA585

BA531 Corporate Finance
3 credit hours (3 hours of lecture)
This course addresses the principles underlying alternative financial arrangements for business operation, capital budgeting, minimum rates of return for capital investments, capital structure, financial analysis and planning, short, intermediate, and long-term financing, and the market for corporate control.
Pre-requisite: BA430M

BA533 Investment Management
3 credit hours (3 hours of lecture)
This course covers the fundamentals of investment management, including the functioning of public and private security markets and the pricing of money market, fixed income, and equity securities. Develop tools to evaluate the value of financial securities and the factors to determine the value of companies -- both publicly listed and private equities. The focus includes quoted and private equity investments and entrepreneurial finance.
Pre-requisite: BA430M

BA536 International Financial Management
3 credit hours (3 hours of lecture)
This course provides students with the background about the international financial systems and a framework for making corporate financial decisions in an international context. Topics include: how to measure currency exposure, financial and operational means to manage currency risk, the decision to undertake a global financing program, exchange and capital market, capital budgeting analysis for foreign direct investment, strategic considerations in the globalization process, and how to value target firms for cross-border acquisitions.
Pre-requisite: BA430M

BA537 Financial Statement Analysis
3 credit hours (3 hours of lecture)
This course combines theoretical concepts underlying the presentation of financial statements with the practical technique of financial analysis. Topics include: accounting processes, examination of the components of the balance sheet, the income statement and the statement of cash flow, application of the various quantitative techniques of financial analysis such as ratio interpretation and EPS evaluation, the meaning and significance of the auditor's opinion, and current SEC reporting regulations. SAP Netweaver ERP Financials and Accounting or Oracle Financials E-Business Suite will be used in this course.
Pre-requisite: BA500 and BA430M

BA541 Entrepreneurship
3 credit hours (3 hours of lecture)
Entrepreneurs are an integral part of a thriving economy. Yet the aspects of successful entrepreneurship remain a mystery. This course is designed to provide a global introduction to the process of turning an idea into a successful startup enterprise or business. The course will be a mixture of class lectures, group discussions, case studies, and a special emphasis on real-world practices through writing a business plan for a marketable business idea in order to arrive at a comprehensive assessment of this type of future endeavor. This course is interesting, fun and rewarding especially for those interested in starting their own business initiatives.
Pre-requisite: Graduate Standing

BA543 International Management
3 credit hours (3 hours of lecture)
This course examines managerial behavior within a cross-cultural environment. It analyzes problems confronting managers in international operations, the impact of international forces on a firm's future, establishing and conducting international transactions. The course is a blend of conceptual material and case analyses.
Pre-requisite: Graduate Standing

BA544 Project Management
3 credit hours (3 hours of lecture)
This course offers a study of project management history, methodologies, processes, leadership and strategic planning. It briefly traces the development of project management, and then discusses the five processes that must be done for project success: Define, Organize, Execute, Control and Close. It studies the best methods and processes of project management that assure success within these five processes. It includes a hands-on course project which enables students to apply Project Management tools and methods to a real world situation.
Pre-requisite: Graduate Standing

BA553 Business Process Management
3 credit hours (3 hours of lecture)
This course is designed to help graduate students apply the principles of Business Process Management (BPM) to improve the organizations in which they work. The course will review the theory and practice of BPM and provide participants with an understanding of the activities needed to ensure BPM success. Topics include strategic planning and the use of balanced scorecards, value chains, and process standardization. The course also includes a project to develop a BPM plan for a specific organization.
Pre-requisite: BA515

BA554 Logistic Management
3 credit hours (3 hours of lecture)
The purpose of this course is to introduce graduate students to basic concepts and knowledge in Logistic Management along with providing students with skills in using ERP tools, such as SAP (Logistics) or Oracle E-Business Suite. These include the management of core logistics functions, cost integration, and supply chain management. It also includes relationships with suppliers, customers and other firm functions such as manufacturing and finance. We will approach issues from a dual perspective of managing logistics to reduce cost and to create competitive advantage.
Pre-requisite: BA515

BA556 Supply Chain Management
3 credit hours (3 hours of lecture)
This course will enable students to develop the ability to conceptualize, design, and implement supply chains aligned with product, market, and customer characteristics. Business competition is now between supply networks rather than individual corporations. Managing the flow of products, information, and revenue across supply chains differentiates the ability of supply networks to fulfill customer needs. Students also will use SAP ERP (SCM) software tools or Oracle E-Business Suite to develop the ability in evaluating how information flows can substitute for the stock of physical resources, such as inventory, and why such systems succeed or fail. They assess how internet technologies, dynamic markets, and globalization are impacting supply chain strategies and practices, including logistics, digital coordination of decisions and resources, inventory and risk management, procurement and supply contracting, product and process design, and revenue management.
Pre-requisite: BA515

BA565 Marketing Research
3 credit hours (3 hours of lecture)
This course emphasizes the development of various research designs used in contemporary marketing. It utilizes contemporary case studies that incorporate both qualitative and quantitative approaches. The relationship between marketing research and the challenges of research in the real world will be stressed. The key components of a marketing research project will also be discussed including sampling, data analysis, and recommendations. Critical thinking and creativity will be encouraged.
Pre-requisite: BA460

BA568 Customer Relationship Management
3 credit hours (3 hours of lecture)
Customer Relationship Management (CRM) links the relationship between suppliers, technology and customers which provides the infrastructure for customer support in the modern e-business environment. CRM is the overall process of building and maintaining profitable customer relations by delivering value and satisfaction to the customer. The integrated information from sales, marketing and service delivery are working together to improve a business. This course provides students with working knowledge of fundamentals of CRM, strategic marketing planning, creative communications, implementation of data and technology in CRM system, statistical analysis techniques of customer data, quantify customer orientation, and develop relationship-driven CRM. Oracle E-Business Suite of CRM or SAP ERP tools (CRM) will be used for students' hands-on experiences and projects.
Pre-requisite: BA515

BA585 Statistical Methods for Business Research
3 credit hours (3 hours of lecture)
This course is designed for graduate students with a business major to utilize probability and statistical analysis methodologies to managerial decision problems based on available business data collected. Topics include: Descriptive Statistics, Exploratory Data Analysis, Probability Theory, Sampling Techniques, Correlation Analysis, Interval Estimation, Maximum Likelihood Estimation, Statistical Hypothesis Testing and Inference, Analysis of Variance, and Statistical Quality Control.
Pre-requisite: MATH210 and MATH212

BA596-004 Product Management
3 credit hours (3 hours of lecture)
A company's fate is often directly tied to the successful introduction of new products and services. Unfortunately, the failure rate of these introductions is high because of the lack of understanding of the product management process. In most companies, the product managers (PM) are responsible for decisions related to a product or service. Their functions include discovering an idea for a new product, defining the features and technical specifications, coordinating the R&D effort, formulating marketing or product launch plan (pricing, sales channels and promotion), forecasting sales volume, profits and risks, making arrangement with manufacturers and preparing a proposal to convince the company's management or potential investors.
This course introduces 6 key phases of the entire new product development process: idea generation and screening, concept development and testing, product development, product launch and product life cycle management.
Pre-requisite: Graduate Standing

BA596-005 Data Mining and Big Data
3 credit hours (3 hours of lecture)
Students will learn different data mining techniques including OLAP and hands-on experience with Data Mining with SQL Server 2008. In addition, the course covers Big Data including: what is Big Data, why Big Data matters, Big Data and the business case, Big data sources, Big data details, and security / compliance / auditing / protection, and best practices for Big Data Analytics. Finally, we survey available open source technologies/tools in the Apache Hadoop including: Ambari, Cassandra, HBase, Hive, Pig, Mahout, and Zookeeper. Finally, a brief overview of the R Statistical programming Language.
Pre-requisite:CS420 or CS520. Background about SQL Server is a plus.

BA596-006 CPA Preparatory FAR (Financial Accounting and Reporting)
3 credit hours (3 hours of lecture)
This course is designed to prepare the student to take and pass the Financial Accounting and Reporting (FAR) section of the Uniform Certified Public Accountant's (CPA) Exam. The course will focus on developing the student's practical and content knowledge about generally accepted accounting principles (GAAP), partnership accounting, stockholders' equity accounting, inventories, consolidated financial statements, segment reporting, accounting theory, financial statement analysis, liabilities, revenues, expenses, specialized accounting concepts, governmental accounting and not-for-profit accounting. Particular emphasis will be placed on helping the student to develop a positive test-taking approach and strong problem-solving skills to ensure success in passing the FAR section of the CPA exam.
Pre-requisite: Graduate Standing

BA596-008 CPA Preparatory AUD (Auditing)
3 credit hours (3 hours of lecture)
This course is designed to prepare the student to take and pass the Auditing and Attestation (AUD) section of the Uniform Certified Public Accountant's (CPA) Exam. The course will focus on developing the student's practical and content knowledge about public auditing standards, governmental auditing standards, reviews, compilations, audit sampling techniques, auditing technology, auditor professional responsibilities and auditing quality standards. Particular emphasis will be placed on helping the student to develop a positive test-taking approach and strong problem-solving skills to ensure success in passing the AUD section of the CPA exam.
Pre-requisite: Graduate Standing

BA596-009 CPA Preparatory BEC (Business Environment Concepts)
3 credit hours (3 hours of lecture)
This course is designed to prepare the student to take and pass the Business Environment Concepts (BEC) section of the Uniform Certified Public Accountant's (CPA) Exam. The course will focus on developing the student's practical and content knowledge about corporate governance, process and project management, microeconomics, business cycles, economic measures, foreign exchange, financial modeling, corporate financial management, information technology, cost accounting and managerial financial analysis. Particular emphasis will be placed on helping the student to develop a positive test-taking approach and strong problem-solving skills to ensure success in passing the BEC section of the CPA exam.
Pre-requisite: Graduate Standing

BA596-010 CPA Preparatory REG (Regulation)
3 credit hours (3 hours of lecture)
This course is designed to prepare the student to take and pass the Regulation (REG) section of the Uniform Certified Public Accountant's (CPA) Exam. Additionally, this course will prepare the student to take and pass the IRS Enrolled Agent (EA) exam. The course will focus on developing the student's practical and content knowledge about business law, professional responsibilities of tax professionals, individual income taxes, partnership income taxes, corporate income taxes and trust and estate taxes. Particular emphasis will be placed on helping the student to develop a positive test-taking approach and strong problem-solving skills to ensure success in passing the REG section of the CPA examined the entire EA exam.
Pre-requisite: Graduate Standing

CURRICULAR PRACTICAL TRAINING (CPT)

Controlling regulation: 8 C.F.R. §214.2(f)(10)(i).

"An F-1 student may be authorized by the D.S.O. to participate in a curricular practical training program that is an integral part of an established curriculum. 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 the school."

CPT491 Curricular Practical Training Project I
(CPT I for undergraduate students)
3 credit hours
Curricular practicum is intended for students to apply learned theory from their coursework to the real-world work setting and research experience. These kinds of practical experiences enhance students' knowledge in the field before graduation from their alternative work and study, internship, and cooperative education. CPT is a part-time (20 hours per week) project-based course and offered by specific sponsoring employers through the establishment of an agreement to collaborate with the university. This course is considered to be an integral part of an established curriculum. To be eligible for taking CPT, students must have completed at least one trimester of coursework (which is required in their degree program) and obtained a Grade Point Average (GPA) of 3.0 or above. Students must receive approval by an academic advisor. Students must obtain a corporate agreement and an offer letter from the internship, which outlines the arrangement between the institution and the university. Students must have specific learning objectives to fulfill the requirements of the course and evaluation criteria of CPT (i.e. Internships must be related to the field of study). International students must follow additional rules enforced by the U.S. Immigration and Customs Enforcement. Students are required to submit a report after they complete their CPT for the purpose of evaluation. Failure in this course will prevent students to take any curricular practicum course in the future.
Pre-requisite: Upper Division Standing

CPT492 Curricular Practical Training Project II
(CPT II for undergraduate students)
3 credit hours
Curricular practicum is intended for students to apply learned theory from their coursework to the real-world work setting and research experience. These kinds of practical experiences enhance students' knowledge in the field before graduation from their alternative work and study, internship, and cooperative education. CPT is a part-time (20 hours per week) project-based course and offered by specific sponsoring employers through the establishment of an agreement to collaborate with the university. This course is considered to be an integral part of an established curriculum. To be eligible for taking CPT, students must have completed at least one trimester of coursework (which is required in their degree program) and obtained a Grade Point Average (GPA) of 3.0 or above. Students must receive approval by an academic advisor. Students must obtain a corporate agreement and an offer letter from the internship, which outlines the arrangement between the institution and the university. Students must have specific learning objectives to fulfill the requirements of the course and evaluation criteria of CPT (i.e. Internships must be related to the field of study). International students must follow additional rules enforced by the U.S. Immigration and Customs Enforcement. Students are required to submit a report after they complete their CPT for the purpose of evaluation.
Pre-requisite: Upper Division Standing

CPT591 Curricular Practical Training Project I
(CPT I for graduate students)
3 credit hours
Curricular practicum is intended for students to apply learned theory from their coursework to the real-world work setting and research experience. These kinds of practical experiences enhance students' knowledge in the field before graduation from their alternative work and study, internship, and cooperative education. CPT is a part-time (20 hours per week) project-based course and offered by specific sponsoring employers through the establishment of an agreement to collaborate with the university. This course is considered to be an integral part of an established curriculum. To be eligible for taking CPT, students must have completed at least one trimester of coursework (which is required in their degree program) and obtained a Grade Point Average (GPA) of 3.0 or above. Students must receive approval by an academic advisor and must also obtain a corporate agreement and an offer letter from the internship, which outlines the arrangement between the company and the university. Students must have specific learning objectives to fulfill the requirements of the course and evaluation criteria of CPT (i.e. Internships must be related to the field of study). International students must follow additional rules enforced by the U.S. Immigration and Customs Enforcement. Students are required to submit a report after they complete their CPT for the purpose of evaluation. Failure in this course will prevent students to take any curricular practicum course in the future.
Pre-requisite: Graduate Standing

CPT592 Curricular Practical Training Project II
(CPT II for graduate students)
3 credit hours
Curricular practicum is intended for students to apply learned theory from their coursework to the real-world work setting and research experience. These kinds of practical experiences enhance students' knowledge in the field before graduation from their alternative work and study, internship, and cooperative education. CPT is a part-time (20 hours per week) project-based course and offered by specific sponsoring employers through the establishment of an agreement to collaborate with the university. This course is considered to be an integral part of an established curriculum. To be eligible for taking CPT, students must have completed at least one trimester of coursework (which is required in their degree program) and obtained a Grade Point Average (GPA) of 3.0 or above. Students must receive approval by an academic advisor and must also obtain a corporate agreement and an offer letter from the internship, which outlines the arrangement between the company and the university. Students must have specific learning objectives to fulfill the requirements of the course and evaluation criteria of CPT (i.e. Internships must be related to the field of study). International students must follow additional rules enforced by the U.S. Immigration and Customs Enforcement. Students are required to submit a report after they complete their CPT for the purpose of evaluation.
Pre-requisite: Graduate Standing

ENGLISH AS A SECOND LANGUAGE (ESL) COURSES

ESL200 – ESL254 (Beginning)

The purpose of this level of ESL is to "reinforce basic English grammatical structures while focusing on strengthening the listening and speaking ability in order to be socially confident to communicate with Americans or other nationalities."

ESL200 and ESL250: Listening and Speaking
80 minutes lecture (5 lectures per week)
Authentic materials are used to practice listening for main ideas and details, make inferences, and express opinions. Class work emphasizes the use of thematic lessons that engage students intellectually in order to begin expressing increasingly complex thoughts at a higher level of language. Lessons are carefully taught as mini-lectures to engage students and expand their listening ability.

ESL202 and ESL252: Conversation and Pronunciation
80 minutes lecture (5 lectures per week)
In these courses, students communicate in English and learn to give presentations on various aspects of American life and comparisons with their native countries. Field trips, scavenger hunts, surveys, photos from home and use of the Internet serve as methods for guiding authentic learning. Students are asked to write dialogues and present them during class.

ESL204 and ESL254: Reading and Writing
80 minutes lecture (5 lectures per week)
These courses are designed to prepare students to develop effective reading and writing skills by using written templates, visual aids, and graphic organizers to organize writing ideas. Students learn about reading strategies, increasing text-based fluency, improving reading comprehension skills, and writing effective paragraphs.

ESL300 – ESL354 (Intermediate)

The purpose of this level of ESL is to "reinforce basic English grammatical structures while focusing on strengthening the listening and speaking ability in order to be socially confident to communicate with Americans or other nationalities."

The goal at this level is to encourage student engagement in English by increasing students' confidence in their conversational ability. For example, students enhance their ability to talk about everyday life in the United States by comparing it to their native country. They learn to present in front of a group, routinely discuss daily life with peers, and learn effective strategies for meeting and talking to people.

ESL300 and ESL350: Listening and Speaking
80 minutes lecture (5 lectures per week)
Authentic materials are used to practice listening for main ideas and details, make inferences, and express opinions. Class work emphasizes the use of thematic lessons that engage students intellectually and emotionally in order to begin expressing increasingly complex thoughts at a higher level of language. Lessons are carefully taught as mini-lectures to engage students and expand their listening ability. The Internet is used by the teacher to supplement their academic lessons.
Pre-requisite: ESL250 (or equivalent)

ESL302 and ESL352: Conversation and Pronunciation
80 minutes lecture (5 lectures per week)
In these courses, students speak only English and use the community where they live as material for presentations on various aspects of American life and comparisons with their native countries. Field trips, scavenger hunts, surveys, photos from home and use of Internet serve as methods for guiding authentic learning. Students are asked to write dialogues and present them during class.
Pre-requisite: ESL252 (or equivalent)

ESL304 and ESL354: Reading and Writing
80 minutes lecture (5 lectures per week)
These courses are designed to introduce students to more complex reading and writing skills. Students learn about reading strategies, increasing text-based fluency, improving reading comprehension skills, and writing short essays using structured paragraphs.
Pre-requisite: ESL254 (or equivalent)

ESL400 – ESL454 (Advanced)

The purpose of this level of ESL is to "emphasize the ability to use a variety of media to supplement spoken and written English presentations which are engaging, educational, and communicative to others for purposes of enrichment, feedback, and improvement."

This level is thematically based on the intent of challenging students to expand vocabulary beyond less formal language to academic, literary, news reporting registers, to learn broadly about global events, communicate effectively in writing, and understand the distinctions of informal speech and formal academic registers. Students are encouraged to use English Internet sites for research projects and present research data in coherent multimedia presentations.

ESL400 and ESL450: Listening and Speaking
80 minutes lecture (5 lectures per week)
Authentic materials are used to practice listening for main ideas and details, making inferences, and expressing opinions during class. Class work emphasizes the use of thematic lessons that engage students intellectually and emotionally in order to express increasingly complex thoughts at a higher level of language. Lessons are taught as mini-lectures to engage students in class activities. The Internet is used as a research tool to enhance topical understanding and interest of the relevant subjects.
Pre-requisite: ESL350 (or equivalent)

ESL402 and ESL452: Conversation and Pronunciation
80 minutes lecture (5 lectures per week)
In these courses, students communicate in English to improve spoken fluency regarding real-world situations, present opinions about relevant topics, heighten self-confidence in everyday speaking ability, and apply new vocabulary and idiomatic expressions more effectively. Most importantly, students are asked to deliver multimedia presentations on current events, topics of social importance, and comparisons across countries to express cultural similarities and differences. Group projects and extensive data collection for presentations are highly encouraged.
Pre-requisite: ESL352 (or equivalent)

ESL404 and ESL454: Reading and Writing
80 minutes lecture (5 lectures per week)
These courses are designed to introduce students to more complex reading and writing skills. Students are expected to display a variety of different writing genres, including compare-contrast, providing opinions, and writing to support one side of an argument. This course is coordinated with the speaking and listening class so that writing topics correspond to respective chapters and lectures. The course emphasizes the application of critical thinking skills and expression of complex thought in short essay writing assignments as preparation for further academic work.
Pre-requisite: ESL354 (or equivalent)

ESL460: TOEFL Preparation Course
120 minutes lecture (2 lectures per week)
This course is designed to prepare students to take and successfully pass any version of the TOEFL, with a strong focus on the Internet-based TOEFL (iBT). In this course, students will learn relevant vocabulary and practice the different types of test questions in the reading, listening, speaking, and writing parts of the test. Most importantly, students will learn crucial test-taking strategies to get a high score on each section. In addition to in-class review, students will be given weekly homework assignments in all language skill areas and will have the opportunity to take real practice tests towards the end of the course.
Pre-requisite: None

UNIVERSITY ADMINISTRATION

Dr. Jerry Shiao
- President / Academic Dean

Mr. Simon Au
- Associate Dean

Dr. Ahmed Ezzat
- DCE Program Director

Dr. Nirdosh Bhatnagar
- CS Program Administrator

Dr. Michael Chen
- CE Program Administrator

Dr. Cameron Bilger
- BA Program Administrator

Mr. Kevin Cheng
- Registrar

Ms. Nico Cheng
- Student Office Manager

Mr. Thomas Huang
- I.T. Manager

Mr. Eric Wang
- I.T. / Database Administrator

Mr. Chris Liu
- Academic Services Officer

Mr. Navyakanth Mikkilineni
- Student Services Associate

Ms. Jane Deng
- Student Services Coordinator

Ms. Luna Liu
- International Students Recruiting Officer

Mr. Binh Tran
- University Librarian

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Ph.D. in Programming, International Technological University, Santa Clara, California (2003)
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Certified Fraud Examiner (CFE, 2008)
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