A Message from the President

To all prospective students:

We all increasingly face the continuous demands and challenges of a fast-paced and complex society that shoulders us with an ever-increasing level of family, social, and economic responsibilities. Northwestern Polytechnic University (NPU) is an educational institution that develops and molds future leaders by providing a unique, cutting edge learning opportunity and training ground that propels our graduates to success wherever their career paths may lead.

The location of NPU in the heart of Silicon Valley along with the efforts and accomplishments of NPU’s faculty and administrators combine to provide a unique environment for students to learn and to gain practical experience. NPU’s forward-thinking staff and administration promote international understanding and cooperation and creatively strive to lead our graduates into achieving not only academic excellence but also a wider view of their roles as individuals and as members of society.

Our university dedicates itself to the continual improvement of academic curricula and programs that combine existing knowledge and new developments arising from today’s ever-changing world. In doing so, NPU’s programs encourage both analytical and creative thinking. Even though the specific goals and objectives of each student are different, it is the dedication to learning that matters. If you are devoted to the pursuit of education and self-enrichment, we invite and welcome you to accept the challenge and further your career and intellectual growth by attending NPU.

Peter Hsieh
President
Frequently Asked Questions

If you have any questions or concerns, please call the university administration office.
Tel: (510) 592-9688; Fax: (510) 657-8975.

The university Website address is http://www.npu.edu.

For Admissions Office: e-mail admissions@npu.edu; Tel (510) 592-9688 ext. 1

- **Is NPU accredited and recognized nationwide?**
  Yes. See Accreditation on page 1.

- **How can I apply to NPU?**
  See admission and application information on pages 3-4 (ADMISSION POLICIES), 34-36 (School of Engineering, Undergraduate Programs), 54-55 (School of Engineering, Masters Programs), 73-74 (School of Engineering, Doctorate Program), 89-90 (School of Business and Information Technology, Undergraduate Program), 104-105 (School of Business and Information Technology, Masters Program), and 118-119 (School of Business and Information Technology, Doctorate Program).

- **How can I get an application form? What should I submit for application?**
  You may apply online from the NPU website by entering the “Admissions” section and clicking the “Online Application” button.

  The required application materials are listed on NPU’s website in the “Admissions” section and in the “Application Guide” subsection. This information is also provided on the online application form.

- **How can I see an admission officer or an academic counselor?**
  Admission officers and academic counselors are available on campus to assist the applicants and the students during office hours posted on the NPU Website at http://www.npu.edu/contact.html. Also see Academic Advising on page 10.

- **What courses do I need to complete for my major?**
  See Curriculum under various degree programs:

  School of Engineering: pages 37-43 (Undergraduate programs graduation requirements), 56-61 (Masters programs graduation requirements), 75-77 (Doctoral program graduation requirements).

  School of Business and Information Technology: pages 92-93 (Undergraduate program graduation requirements), 106-107 (Masters program graduation requirements), 120-122 (Doctoral program graduation requirements).

- **I want to know the costs for taking courses or pursuing a degree.**
  See the tuition and fees information on pages 4 (Tuition), 5 (Fees), 37 (School of Engineering, Undergraduate programs), 56 (School of Engineering, Masters Programs), 75 (School of Engineering, Doctorate Program), 91 (School of Business and Information Technology, Undergraduate Program), 106 (School of Business and Information Technology, Masters Program), and 120 (School of Business and Information Technology, Doctorate Program).

- **How do I register for classes?**
  See Registration and related information on page 11.

- **Where can I find the directions to NPU?**
  See page 137 or on our web site at http://www.npu.edu/contact.html.
2016 Academic Calendar

Spring Semester (1/11 – 4/24)

January
1  New Year Holiday; Campus Closed
4  · Posting final grades for 2015 fall semester
    · Check point – student counseling
4-6 New students report to campus/Orientation
11 Semester and classes begin
11-17 · Late registration
         · Add/Drop
17  Last day to add/drop (without affecting official records)
25-31 Classroom observation - by peer faculty

February
20 Summer semester application deadline for international students
22-28 Mid-term exams
29  · Deadline for graduation petition for summer semester (without late fee)
    · Deadline for changing program or requesting to use new curriculum (without late fee)

March
7-11 Check point – student counseling
14 Summer class schedule and registration packages ready
21  · Begin registration for the summer semester
    · Faculty evaluation - by students

April
1  Summer registration ends (for current students)
2  Late registration for summer semester begins (for current students)
15 Summer semester application deadline for local and international transfer students
18-24 Course review and final exams

May
2-6 New students report to campus/Orientation
4  · Posting final grades for spring semester
    · Check point – student counseling
2016 Academic Calendar (continued)

Summer Semester (5/9 – 8/22)

May
2-6   New students report to campus/Orientation
9     Semester and classes begin
9-15  · Late registration
      · Add/Drop
15    Last day to add/drop (without affecting official records)
23-29 Classroom observation - by peer faculty
30    Memorial Day Holiday; Campus Closed

June
4     Fall semester application deadline for international students
18    Graduation ceremonies (for students graduated in the 2015 Fall and 2015 Spring terms)
20-26 Mid-term exams
27    · Deadline for graduation petition for fall semester (without late fee)
      · Deadline for changing program or requesting to use new curriculum (without late fee)

July
4     Independence Day Holiday; Campus Closed
5-8   Check point – student counseling
11    Fall class schedule and registration packages ready
18    · Begin registration for the fall semester
      · Faculty evaluation - by students
29    Fall registration ends (for current students)
30    Late registration for fall semester begins (for current students)

August
12    Fall semester application deadline for local and international transfer students
15-22 Course review and final exams
24-26 New students report to campus/Orientation
29-31 New students report to campus/Orientation
31    · Posting final grades for summer semester
      · Check point – student counseling

September
1-2   New students report to campus/Orientation
5     Labor Day Holiday; Campus Closed
2016 Academic Calendar (continued)

Fall Semester (9/8 – 12/21)

September
1-2  New students report to campus/Orientation
5    Labor Day Holiday; Campus Closed
6    Semester and classes begin
6-12 · Late registration
      · Add/Drop
12   Last day to add/drop (without affecting official records)
19-25 Classroom observation - by peer faculty

October
1    2017 spring semester application deadline for international students
18-24 Mid-term exams
24   · Deadline for graduation petition for next spring semester (without late fee)
      · Deadline for changing program or requesting to use new curriculum (without late fee)

November
1-4  Check point – student counseling
14   · Begin registration for the 2017 spring semester
      · Faculty evaluation - by students
24   Thanksgiving Holiday; Campus Closed
25   Spring registration ends (for current students)
26   Late registration for 2017 spring semester begins (for current students)

December
10   2017 spring semester application deadline for local and international transfer students
13-19 Course review and final exams
24-31 Christmas Holiday; Campus Closed

January 2017
1    New Year Holiday; Campus Closed.
2    · Posting final grades for 2016 fall semester
      · Check point – student counseling
2-6  New students report to campus/Orientation
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INTRODUCTION

The Northwestern Polytechnic University (NPU) catalog is a semester-by-semester publication containing information on academic requirements, learning facilities, tuition and fees, and disciplinary issues concerning all applicants and students at NPU. Student handbooks, for local and for international students, are published separately every semester and posted on the NPU Online Service Center (“NPUOSC”). New students are introduced to the NPUOSC on the New Student Orientation Day. The handbooks provide additional information to help the students adjust to the school environment quickly and learn how to use the administrative services provided to them.

The majority of the information contained in this catalog and other pertinent information is also available on the university website at www.npu.edu.

Mission

Northwestern Polytechnic University’s mission is to provide advanced education and a high technology learning environment that motivates students to pursue intellectual growth and promotes professional career development, and to prepare them to become high technology and global leaders. NPU’s objectives are:

- To have qualified faculty with active high technology careers and experience to educate students in a stimulating learning environment and to allow graduates to hit the ground running.
- To prepare individuals to acquire the modern knowledge and necessary skills to meet the challenges of fast-moving local and global companies in a variety of industries.
- To cultivate a high level of integrity and professional ethics in our graduates.

NPU seeks to prepare its students to begin and enhance their professional careers in computers, engineering, and business, through study in both undergraduate and graduate curricula.

Faculty

The University faculty maintains a tradition of personal attention to students and devotion to teaching and research. Many members of the faculty have been cited for excellence in teaching. Some of them are leaders in their disciplines and professional organizations. Members of the faculty have had the experience of working in high-tech fields and various business professions; some also acted as consultants to educational institutions, industry, businesses, government, and foundations.

Accreditation

Northwestern Polytechnic University is an academic institution accredited by the Accrediting Council for Independent Colleges and Schools (ACICS) to award bachelor’s degrees, master’s degrees, and doctorate degrees. ACICS is listed as a nationally recognized accrediting agency by the United States Department of Education and is recognized by the Council for Higher Education Accreditation. ACICS may be contacted at 750 First Street, NE, Suite 980, Washington, DC 20002-4241, Tel: (202) 336-6780.

The current scope of accreditation for ACICS, as approved by the U.S. Department of Education and the Council for Higher Education Accreditation, includes diploma programs and degree programs through the master’s degree. Accreditation of a doctoral program by ACICS does not make the program eligible for purposes of participation in federal student aid programs, as described in Title IV of the HEA. Contact the NPU administration office for further information.

Corporate Status

Northwestern Polytechnic 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.

NORTHEASTERN POLYTECHNIC UNIVERSITY ADMINISTRATES ALL ITS PROGRAMS WITHOUT REGARD TO RACE, ETHNIC ORIGIN, AGE, OR SEX. NPU CONFRONTS AND REJECTS ALL MANIFESTATIONS OF DISCRIMINATION
IN ITS EDUCATIONAL POLICIES, ADMISSION POLICIES, SCHOLARSHIPS, OR OTHER SCHOOL ADMINISTERED PROGRAMS.

Governance Board

NPU is governed by its Board of Trustees. Board members consist of NPU faculty members, well-known scholars and educators, and community leaders. They provide voluntary service and receive no remuneration as NPU is a nonprofit, public-benefit educational institution.

Community Involvement

The University is first and foremost an institution of learning and teaching, committed to serving the needs of society and involved in the academic and civic communities of which it is a part. The NPU administrators participate in local job fairs and work with local businesses to provide job opportunities for our students.
ADMISSION POLICIES

NPU admits all qualified individuals into the university without regard to race, religion, sex, ethnic origin, or physical handicap.

NPU makes education available to all individuals who meet the qualifications for entrance into NPU.

Trimester: The school’s annual calendar and course offering are based on a trimester system of three 15-week semesters starting in January, May, and September of the year. An applicant may apply for entrance in any of the three trimesters each year.

The application deadline for each trimester is given in the Academic Calendar included in this catalog as well as posted on the NPU website. Applicants are advised to apply online at http://www.npu.edu/Admissions.html.

Late Application: A late application fee will be charged for applications received after the deadline each trimester. Overseas applicants should apply earlier to allow sufficient time for processes related to visa application and international travel. The online Application Guide provides application details.

Application Requirements

Refer to the description on application requirements in the section for the school and level of program of your choice.

Official Transcripts

Official transcripts are required for admission into a degree program. All official transcripts must be received before the admission evaluation. Late submissions are permitted only with the approval of the Admissions Committee. Students enrolled in courses at another institution at the time of application will have 60 days after the completion of the courses to provide NPU with the updated transcripts. Failure to submit official transcripts on time may result in placement of the applicant in a non-degree status or withdrawal from the university.

Admission Evaluation: The NPU Admissions Committee provides individualized admission evaluation service and follows the approved credit transfer policy to transfer credit for each applicant. A copy of the evaluation report will be provided to the accepted applicant.

Document Submission

Please note all documents that you submit, or are submitted on your behalf, in support of your application for admission, or to fulfill enrollment requirements, become the exclusive property of NPU. NPU will under no circumstances release the documents to you or any other party, nor will NPU provide you with any copies of the documents.

Notification of Admission

Upon approval of admission, prospective students will receive a notification of admission status. An applicant may be admitted with full or conditional admission status. An applicant denied for admission will receive an explanation for their denied application. Processing times will vary. Processing begins upon receipt of all hard copies of required documents as instructed, and not upon simply submitting an application.

Confirming Intent to Report

All accepted applicants are required to confirm their intent to report to reserve their place in the accepted term. Instructions, applicable fees, and due dates are provided in the acceptance package.

Cancellation of Admission and Readmission

If an applicant is accepted into a degree program for a given semester and does not begin classes in that semester, admission will automatically be canceled. The prospective student’s application records (transcripts from previous colleges and American language proficiency records) are kept on file for a period of six months from the semester start date. If the applicant then wishes to be considered for readmission in a later semester, he/she will be required to (1) resubmit an application online with the initial account ID and (2) pay the application fee. A reevaluation of admission will be made for the applicant. If
reapplication is made more than six months from the initial admission term, the applicant may be required to submit an entire new set of the application materials.

(Returning Students)

When a former NPU student returns to continue his/her study in an unfinished program after skipping more than one term, the returning student must submit a new online application and pay the application fee. The student will receive a new evaluation and study plan based on the graduation requirements specified in the current catalog. The admission evaluators follow the policy in effect to transfer the prior credit earned by the returning student in the unfinished program. The policy limits the absence period for transfer of previously earned credit.

(International Students)

NPU is authorized under federal law to enroll non-immigrant international students.

Veteran Students: Currently the CSAAVE is the state agency responsible for approving veteran education programs.

(NPU Institution Codes for Standardized and International Tests)

SAT 4335 | GMAT 5485
GRE 5485 | TOEFL 9626
CLEP 7569 | DANTES 9670

(English Language Classes (ESL Classes))

Students conditionally accepted due to English deficiency are required to enroll in ESL classes (English language classes) based on their English assessment records.

The ESL classes are offered with the same trimester schedule as that for the degree courses. Students placed in the highest levels of ESL classes may be allowed to concurrently take a limited number of degree classes at NPU, provided that this optimizes their learning objectives. Students passing the highest level of ESL classes are considered meeting the English entrance requirement for degree programs.

(New Student Orientation)

All new students are required to attend the New Student Orientation program conducted at NPU before each semester starts.

ENROLLMENT AGREEMENT

Upon joining NPU, a student is presented an Enrollment Agreement form, in digital format, which indicates the student’s program, length of study, estimated costs, refund policy, and other information. The student should read the information on the form and provides digital signature online.

TUITION

For tuition information on the program of your interest, please refer to the proper section describing the level of the program and its disciplinary area.

Special tuition rates: Special tuition rates may apply to the following groups of students:

- NPU faculty or family members taking courses for credit. The policy is posted on the faculty Online Service Center website.
- NPU staff members approved to take courses for credit or staff family members taking courses at NPU.
- Exchange students: Tuition rate is based on terms of the agreement document.
- Faculty, administrators, or students recommended by sister schools to take courses at NPU for credit: Tuition rate is based on terms of the agreement document.
- Unemployed workers approved by the EDD to take courses or pursue a degree at NPU may be offered tuition discount based on the terms of the agreement document.

In general, tuition scholarships do not apply to students in these groups.
FEES

I. Admission Fees

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Applicant</td>
<td>$100</td>
</tr>
<tr>
<td>(includes express mail service)</td>
<td></td>
</tr>
<tr>
<td>Local Applicant</td>
<td>$80</td>
</tr>
<tr>
<td>Application Late fee</td>
<td>$100</td>
</tr>
<tr>
<td>Intent to Report Fee</td>
<td>$100</td>
</tr>
<tr>
<td>Intent to Report Late Fee</td>
<td>$100</td>
</tr>
</tbody>
</table>

II. Service Fee Schedule
(Incurred upon registration or request of services only)

**Notice:** Please observe deadlines to avoid late fee charges. *All late fees are $50 except if specified.*

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration fee (per semester)</td>
<td>$75</td>
</tr>
<tr>
<td>Learning resource fee (per semester)</td>
<td>$200</td>
</tr>
<tr>
<td>Campus fee (per semester)</td>
<td>$125</td>
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<tr>
<td>Add/Drop request processing fee</td>
<td></td>
</tr>
<tr>
<td>1st request</td>
<td>$10</td>
</tr>
<tr>
<td>2nd request</td>
<td>$20</td>
</tr>
<tr>
<td>3rd request</td>
<td>$50</td>
</tr>
<tr>
<td>4th request</td>
<td>$100</td>
</tr>
<tr>
<td>Late registration fees (continuing students only):</td>
<td></td>
</tr>
<tr>
<td>- Up to the end-of-semester</td>
<td>$50</td>
</tr>
<tr>
<td>- During the semester break</td>
<td>$75</td>
</tr>
<tr>
<td>- After the start of new semester</td>
<td>$100</td>
</tr>
<tr>
<td>Late registration fee (new students only)</td>
<td></td>
</tr>
<tr>
<td>- After the start of new semester</td>
<td>$20</td>
</tr>
<tr>
<td>- Week after the start of new semester</td>
<td>$120</td>
</tr>
<tr>
<td>Payment Plan service fee</td>
<td></td>
</tr>
<tr>
<td>- 2-payment plan</td>
<td>$100</td>
</tr>
<tr>
<td>- Late Payment Fee</td>
<td>$50</td>
</tr>
<tr>
<td>- Very Late Payment Fee</td>
<td>$100</td>
</tr>
<tr>
<td>Change major/new study program</td>
<td>$50</td>
</tr>
<tr>
<td>Use new curriculum (new study plan)</td>
<td></td>
</tr>
<tr>
<td>EPE or SAT-I / GMAT / GRE equivalency test (each exam)</td>
<td>$50</td>
</tr>
<tr>
<td>Undergraduate student challenge exam fee</td>
<td></td>
</tr>
<tr>
<td>(in addition to the course tuition)</td>
<td>$100</td>
</tr>
<tr>
<td>Proficiency exam fee</td>
<td></td>
</tr>
<tr>
<td>(per subject and no credit earned)</td>
<td>$150</td>
</tr>
<tr>
<td>Qualifying exam fee (DCE program)</td>
<td></td>
</tr>
<tr>
<td>(per exam)</td>
<td>$100</td>
</tr>
<tr>
<td>Dissertation fees (DCE program):</td>
<td></td>
</tr>
<tr>
<td>Proposal Presentation</td>
<td>$300</td>
</tr>
<tr>
<td>Oral Defense</td>
<td>$500</td>
</tr>
<tr>
<td>Dissertation fees (DBA program):</td>
<td></td>
</tr>
<tr>
<td>Preliminary Proposal Presentation</td>
<td>$300</td>
</tr>
<tr>
<td>Methodology Presentation</td>
<td>$300</td>
</tr>
<tr>
<td>Oral Defense</td>
<td>$500</td>
</tr>
<tr>
<td>Petition for graduation fee</td>
<td>$300</td>
</tr>
<tr>
<td>Each re-petition for graduation</td>
<td>$50</td>
</tr>
<tr>
<td>Transcript Fees</td>
<td></td>
</tr>
<tr>
<td>- First 2 copies</td>
<td>Free</td>
</tr>
<tr>
<td>- Additional copies</td>
<td>$5</td>
</tr>
<tr>
<td>Express service fee</td>
<td>$120</td>
</tr>
<tr>
<td>Insurance Cancellation Fee</td>
<td>$100</td>
</tr>
<tr>
<td>Refund processing fee</td>
<td>$100</td>
</tr>
<tr>
<td>Returned/bad check fee</td>
<td></td>
</tr>
<tr>
<td>First fee</td>
<td>$25</td>
</tr>
<tr>
<td>Subsequent fees</td>
<td>$35</td>
</tr>
<tr>
<td>Chargeback fees</td>
<td>$100*/$200*</td>
</tr>
<tr>
<td>Replacement of lost student ID card</td>
<td>$10</td>
</tr>
<tr>
<td>Int’l student transfer-out processing fee</td>
<td></td>
</tr>
<tr>
<td>(not for NPU alumni)</td>
<td>$150</td>
</tr>
<tr>
<td>OPT Extension Service fee</td>
<td>$20</td>
</tr>
<tr>
<td>International student health insurance fee</td>
<td></td>
</tr>
<tr>
<td>(estimated fee per semester)</td>
<td>$350</td>
</tr>
<tr>
<td>International student special request service fees</td>
<td>Specified on Request form</td>
</tr>
</tbody>
</table>
| Transcripts
| First 2 copies                              | Free    |
| Additional copies                           | $5      |
| Express service fee                         | $120    |
| Insurance Cancellation Fee                  | $100    |
| Refund processing fee                       | $100    |
| Returned/bad check fee                      |         |
| First fee                                   | $25     |
| Subsequent fees                             | $35     |
| Chargeback fees                             | $100*/$200* |

* Before requesting a chargeback from his/her credit/debit card provider for any disputed credit/debit card charge, the applicant or student shall make a formal request in writing directly with the NPU’s finance office of such disputed charge. The applicant or student will provide NPU 15 business days to resolve the issue. If the applicant or student does not abide by these rules, NPU will charge a chargeback fee of $100. If the applicant or student does not agree with the NPU’s findings and submits a chargeback that is denied by his/her credit/debit card provider, NPU will charge a chargeback fee of $200.

- Textbook is estimated at $80-$150 per book.
- All international students are required to purchase a **health insurance plan**. The annual cost is estimated at $1,000.

**NOTICE:** For any student who does not fulfill his/her financial obligation to the school on time, a penalty of $20/month will be debited to the student’s financial account until his/her obligation is fulfilled. In addition, the late fee and **automatic withdrawal rule** will also apply.
REFUND POLICY

Any student requesting for refund is required to submit a copy of the form “Account Refund Request Form” to the Business Office. All requests are subject to administrative approval and NPU shall not process a refund for credit balances arising from funds specifically designated by a third party (e.g., bank or scholarship fund) for tuition and qualified expenses.

There is a $100 service fee for each account refund request, except that NPU shall waive the service fee for a student that (1) makes the request after his/her graduation from NPU and (2) has satisfied all program, administrative, and financial requirements and obligations.

Refunds Due to Regular Add/Drop of Courses

Refunds are processed at the end of the add/drop and withdrawal period each semester. The following policy applies to these students:

1. For courses dropped before the end of the second week of instruction, the school will refund to the appropriate party any tuition received by the school from or on behalf of the student for the current semester.

2. For courses dropped after the second week of instruction but within the first 75% of the current semester, the school will refund to the appropriate party a prorated portion of the tuition received by the school from or on behalf of the student for the current semester as follows:

<table>
<thead>
<tr>
<th>Before the end of week</th>
<th>% Refund</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>80%</td>
</tr>
<tr>
<td>4&amp;5</td>
<td>70%</td>
</tr>
<tr>
<td>6</td>
<td>60%</td>
</tr>
<tr>
<td>7&amp;8</td>
<td>50%</td>
</tr>
<tr>
<td>9</td>
<td>40%</td>
</tr>
<tr>
<td>10&amp;11</td>
<td>30%</td>
</tr>
<tr>
<td>12 through 15</td>
<td>0%</td>
</tr>
</tbody>
</table>

For a student receiving VA education benefits, in addition to the prorated tuition, the school will refund a prorated portion of the application fee.

3. After the first 75% of any semester the student attends the school, the school will only refund to the appropriate party the tuition and fees received by the school from or on behalf of the student for any future semester if applicable.

4. Registration fee, learning resource fee, and campus fee are non-refundable.

Students who leave a course without official withdrawal (drop) are subject to a failing grade in the course.

Refunds Due to Withdrawal from NPU

1. 3-day full refund: If the withdrawal occurs within 3 days after enrollment, a full refund applies, including tuition, registration fee, learning resource fee, and campus fee paid for the semester.

2. Except for the case of 3-day full refund, the registration fee is non-refundable.

3. Other than the case of 3-day full refund, the campus fee and learning resource fee are refundable if the withdrawal occurs by the end of the first week of instruction.

4. If the withdrawal occurs before the end of the second week of instruction, the school will refund to the appropriate party:

   (a) Any tuition received by the school from or on behalf of the student for the current semester.

   (b) Any tuition and fees received by the school from or on behalf of the student for any future semesters.

5. If the withdrawal occurs after the end of the second week of instruction, the same tuition refund policy (see the above refund table) applicable to other students who remain enrolled applies.

6. The school will issue a refund for withdrawal within 30 days of the student’s withdrawal, termination date, or the specified time period under applicable law, whichever occurs first. The student will remain obligated to the school for all unpaid
tuition, fees, and other amounts charged the student pursuant to the agreement or otherwise that are not subject to refund in accordance with this section.

7. A student withdrawing from NPU should submit an online request in order for the Records Office and the Business Office to process the student’s tuition refund. In general, the student’s withdrawal or termination date will be the student’s last date of attendance at the school. The student should return all items owed to the library and the school and clear any financial balance owed to the school upon withdrawing from the school.

8. If the school determines, in its sole and absolute discretion, that the student's withdrawal or termination from the program during any semester was the proximate result of the student’s suffering from an incapacitation, such as

(a) illness,
(b) accident,
(c) death of a close family member, or
(d) similar circumstances,

then the school will determine whether to increase the refund amount specified above of the tuition and fees received by the school from or on behalf of the student for the semester.

NOTE: Any outstanding fees owed to the University by the student will be deducted from the tuition refund.

MINIMUM TERMS FOR TUITION PAYMENTS

The student is only obligated for the portion of the program cost applicable to each semester in which the student is enrolled in the school. The student must pay the school the applicable cost (i.e. semester tuition, other required fees) at the time of registration, unless the student and school agree in writing to a tuition payment plan.

Students whose tuition/fees are overdue are subject to withdrawal from classes by the school. Students who fail to fulfill their financial obligations to the school may be suspended from school and may be considered for reenter only after full payment of the delinquent portion of their account unless the school has agreed in writing to a different payment arrangement.

Penalty: For any student whose tuition/fees are past due, a penalty of $20/month will be debited to the student’s financial account until his/her obligation is fulfilled.

If the student withdraws or is terminated from the program for any reason and subsequently applies to reenter the school, the school will determine in its sole discretion whether to allow the applicant to reenter. If the school allows the applicant to reenter, the student must execute a new enrollment agreement and pay all the current program costs.

DEBTS OWED TO THE UNIVERSITY

Should a student or former student fail to pay a debt owed to the University, NPU may withhold permission to register, to use facilities for which a fee is authorized to be charged, to receive services and materials, or any combination of the above from any person owing a debt until the debt is paid (see Title 5, California Administrative Code, Sections 42380 and 42381). The University will withhold issuance of official transcripts of grades to any person owing a debt. If a student believes that he or she does not owe all or part of an unpaid obligation, the student should contact the campus Business Office. The Business Office will review the pertinent information, including any information the student may wish to present, and will advise the student of its conclusions with respect to the debt.

SCHOLARSHIPS

Tuition scholarships are offered to qualified applicants and current students. The NPU Scholarship Committee is responsible for evaluating, selecting, and awarding scholarships.
Tuition Scholarships for New Applicants

NPU scholarships for new applicants are merit-based financial awards offered to qualified applicants interested in pursuing degree programs at NPU.

Qualifications are posted on the NPU website and, at a minimum, cumulative GPA from the official transcripts received by the admissions office and scholarship application are the evaluation criteria. If the applicant’s native language is not English, official TOEFL/IELTS score is an additional requirement. The required minimum scores for scholarship awards are: TOEFL - 90 (IBT), or 233 (CBT), or 577 (PBT); IELTS - 7.0 bands.

The scholarship application deadline for each term is in general three months before the term begins.

If the applicant is granted the scholarship, he/she will be awarded with a tuition scholarship of $500 per semester for the first three semesters, a cumulative tuition scholarship of $1,500, provided that the student enrolls full-time consecutively for the first three semesters, maintains a CGPA of 3.3 or above for a graduate student and 3.0 or above for an undergraduate student in his/her study at NPU, and is in good standing with the University.

Tuition Scholarships for Current Students

Tuition scholarships are awarded to current students in the fall trimester. Ten $1,000 scholarships are awarded to qualified students who are pursuing degrees at NPU. Application for the scholarship must be received by the Scholarship Committee by the deadline - June 30th. The following are the qualifications:

1. The student must have completed at least two semesters of coursework towards his/her degree goal at NPU,

2. The student has maintained a cumulative GPA of at least 3.8 at NPU,

3. The student must be recommended by at least one faculty member for the scholarship award,

4. The student must be in good standing with the University,

5. The student must be a contributing member of the NPU Student Association or student extracurricular activities,

6. The student must be an active member in at least one professional society, and

7. The student is required to submit a Statement of Purpose and give a presentation in an open forum to clearly state the student’s academic goal, services provided to the community or fellow schoolmates, personal qualities and skills obtained, and other points that the student chooses to make. The Scholarship Committee is responsible for arranging the presentation schedule.

STUDENT ON-CAMPUS WORK-STUDY OPPORTUNITIES

Limited openings in NPU’s work-study programs are available to highly qualified degree-seeking candidates. Applications are made via the NPU Online Service Center.

The students may apply for grader-ship, Teaching Assistantship (TA), or Laboratory Assistantship (LA). These assistantships are offered primarily on the basis of outstanding academic and professional achievement. Students chosen to perform these services must have the heart for helping fellow students in addition to meeting the academic qualification. Each semester the administrative staff works with the faculty to assign graders, TAs, and LAs to assist faculty and students in a group of classes.

PRACTICUM AND INDUSTRIAL COOPERATIVE PROJECTS

Practicum is a supervised practical experience that is the application of previously studied theory. Normally, three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture. Under the supervision
of a faculty or staff member, a written agreement shall be developed that outlines the arrangement between the institution and the practicum site, including specific learning objectives, course requirements, and evaluation criteria. Details of the qualifications are specified in the application process for the student. The supervising staff is responsible for checking the student’s qualifications.

**Industrial Cooperative Projects:** Highly selective internship opportunities with a number of local companies are available for qualified students. Available internship project information is posted on the Job Posting Board on the controlled NPU Online Service Center website.

**International students** must observe additional rules required by the U.S. Immigration & Customs Enforcement on Curricular Practical Training (CPT).
ACADEMIC INFORMATION

Study Plan

Upon admission to a degree program, the new student receives a copy of his/her admission evaluation form which also includes his/her graduation requirements. The electronic file of the student’s study plan will be maintained by designated administrative staff as the student continues his/her study at NPU. The student will have access to his/her own study plan through NPU’s Online Service Center. The student is advised to check his/her online study plan regularly and report any error to the administrative staff immediately.

Designated academic advisors will assist each student to select a concentration area, if it is required in the program, as well as courses to fulfill the requirements for the concentration area as well as the electives.

Follow Proper Sequence: In general, a student should complete lower-level courses before taking higher-level courses. A graduate student should clear all deficiencies before taking graduate level courses. For students taking ESL courses, see the section on “American Language Classes (ESL)” under “Admission Policies”.

Follow Original Plan: A student should follow his/her original study plan to complete his/her study in the program. When courses are replaced due to a catalog update, the student should take the replacement courses as substitutes accordingly. The student may also submit an online request, via the NPU Online Service Center, to “Request for Substitution of a Required Course” for each such update of a course.

Use New Curriculum: As the school catalog is updated each semester, a student is allowed to submit a request for upgrading his/her study plan by using the graduation requirements specified in the newer and current catalog. The evaluation committee will make a new study plan for the student. The student may risk additional course requirements with such a request since the new requirements are different from the previous ones for the same program. The student is advised to make a careful decision before submitting such a request as the process is not reversible.

Returning Student: When a student returns to NPU to continue his/her study in an unfinished program after skipping more than one term, the returning student must submit a new application form and will receive a new study plan based on the graduation requirements specified in the current catalog. The credit transfer policy in effect at the time of return is used to transfer the credits earned by the student from his/her previous study in the unfinished program at NPU.

Academic Advising and Counseling

Academic advising and counseling is an essential element of the educational process. Designated faculty members and staff advisors serve as academic advisors and counselors to the students. Academic advising and counseling involves both the student and the advisor/academic counselor.

Although online registration is available to the student, he/she is welcome to meet with an academic advisor before and during the course registration period each semester. During the meeting, the advisor and the student will examine the student's study plan and academic records, verify course prerequisites, and choose suitable courses to enroll. Academic advising is also available to students throughout the school year. In addition to helping students plan course schedules, academic advisors may also encourage students to explore their academic options and personal goals in preparation for entering the professional world.

To ensure satisfactory progress of each student, designated administrative staff maintains close contact with the faculty and the teaching assistants to monitor those students who may need extra help. Class attendance records, available online to the managing staff, are used as one input for student counseling. The student is to be contacted for counseling when either of the following occurs: (1) The managing staff is informed by any instructor who is concerned about the student’s performance in the class at any checkpoint during the semester, (2) the student has a poor attendance record, (3) the student is placed in academic-probation status.
Class Schedule

Classes are scheduled every trimester. The class schedule is published approximately 7-8 weeks before the trimester starts, and it falls on the timeline shortly after the mid-term point in the preceding semester. Publication of the new class schedule readies the current students for the pre-registration activity.

Many degree program classes, especially graduate courses, are conducted on weekday evenings and on weekends to allow both non-working students and working professionals to pursue their studies during after-work hours. A number of degree courses and most American Language classes are conducted on weekdays in the daytime. Since the Learning Resource Center and the Student Center are open in both day and evening, full-time students may use weekdays’ daytime to study, conduct research, do homework, practice hands-on exercises in the labs or work on projects in the practicum labs, or get involved in extracurricular activities. Full-time administrative personnel are available on campus days and evenings, and weekdays and Saturdays to assist the students, faculty, and prospective applicants.

Registration

The registration calendar is listed in the University catalog and on the NPU website. The semester registration notice is sent to the students by e-mail and posted on the NPU website and bulletin boards. The registration packages are available online as well as in the library. Late registration fees will be imposed on all continuing students who register after the official pre-registration deadline.

1. All applicants to NPU must first be admitted into the University by the Admissions Office before enrolling and attending classes.

2. Except for new students registering for courses in the first semester, all on-going students must register on or before the scheduled pre-registration deadline for each semester.

New students who have received their acceptance documents are scheduled to register during the reporting and orientation period before the semester starts.

3. All students are urged to register online. Designated staff advisors are ready to offer assistance to the students for course selection or counseling.

4. Tuition and fees are due and payable in full at the time of registration unless the student has signed up for a tuition payment plan. Tuition payment plans are not applicable to new international students in their initial registration for their first semester of studies at NPU.

5. Working professionals who enjoy education benefits offered by their employers and receive tuition reimbursements may follow NPU’s special payment plan by submitting supporting documents to the NPU Administration Office prior to registration.

6. An undergraduate student wishing to enroll in more than 16 units and a graduate student in more than 12 units in a given semester must obtain permission from the student’s school dean.

7. Students on academic probation may be advised to enroll with limited course load.

8. Any student attending a class without officially registering in the class will be required to pay a fine as defined by the administration.

9. An international student is required to enroll as a full-time student (see definition in the next section) and maintain good status with the University during his/her study at NPU.

10. All international students are required to have a valid health insurance plan. They are required to purchase the health insurance plan contracted by NPU and pay the insurance fee at registration time.

11. Registration is complete when all fees are paid.

12. Students with a prior bad-check record will not be allowed to pay by check again.

A non-international student may enroll as a full-time or part-time student.
Full-Time Students

Undergraduate students taking 12 or more units per semester and graduate students taking 9 or more units per semester are considered full-time students for the enrolled term.

All international students must be enrolled as full-time students. In NPU’s trimester system, an international student is required to enroll full-time for two consecutive semesters before being allowed to either take a semester break or enroll with part-time course load for one semester. The international students must observe the NPU class attendance policy, maintain satisfactory progress towards completion of their degree objectives, and maintain good status with the University. See an International Student Advisor in the Administration Office for information on how to maintain “full-time” status at NPU.

Part-Time Course Load

Undergraduate students taking less than 12 units per semester and graduate students taking less than 9 units per semester are considered taking part-time course load in the enrolled term.

Non-degree Students

A person may wish to take courses at NPU as a non-degree student. It is the non-degree student’s responsibility to prove that he/she meets the prerequisite requirement when enrolling in a course. Therefore, a non-degree student is advised to submit his/her previous academic records, official or unofficial, to the Admissions Office.

A student pursuing a degree study may be placed in non-degree status when the student violates certain rules. Examples are: failure to submit official transcript or other required documents by a given deadline, failure to maintain satisfactory academic progress, failure to follow the student’s study plan. A student placed in non-degree status is required to remedy the flaw within a limited period of time. Violation of this limitation may result in termination of the student’s study at NPU.

Pre-degree Status

When a student is taking courses to clear background deficiencies, including ESL subjects, and the enrolled subjects constitute a sizable portion of his/her course load in a semester, the student is considered to be in pre-degree status for the semester.

Change Study Status

In the event that the non-degree student decides to apply for degree study at NPU, he/she must go through the regular degree program application procedures. No more than 12 units earned in non-degree status at NPU may be applied to the degree requirements.

Adding and Dropping Courses

After registering for a semester, a student may add/drop courses by a deadline which is specified in the school calendar. Adding courses is allowed in the first week of the semester and is on a space available basis. Only four Add/Drop requests (for one or multiple courses) are allowed by the add/drop deadline after each registration except for courses affected by cancellations made by the administration. A student may drop courses without records’ effect if it is made before the deadline – end of the first week of the semester.

From the second through the last week of the semester, a student may drop courses for serious and compelling reasons after discussing this with an academic counselor. The student will be issued a grade of “W”.

To add/drop courses, the student must:

1. Add/drop courses online if the online registration activity is open. Otherwise, meet with a staff advisor to add/drop courses. The Records Officers will review the add/drop request and approve or deny the request. International students must observe the “full-time” requirement.

2. Pay applicable fees (including Add/Drop fee except for courses affected by cancellations made by the administration).

The late registration fee is not assessed for courses added under this policy. Any refund for dropped courses will be calculated according to the Refund Policy.
No official withdrawal: Students who leave a course without official withdrawal (drop) are subject to a failing grade in the course.

Grading Policy and Academic Standards

- Grades

The instructors are requested to submit their semester grades for their classes within one week after the last day of the semester. An online grade entry system is used by the instructors to enter grades. Each student may check his/her own academic records online. Grades are not given out over the telephone. The following symbols shall be used in evaluating student performance. The symbols reflect the quality of the student’s accomplishments relative to standards set for each course.

- A = Highest level, showing excellence.
- B = Performance is good, but not at the highest level.
- C = Performance is adequate in an undergraduate course, passing in a master’s degree course, and failing in a doctorate degree course.
- D = Performance is passing in an undergraduate course and failing in a graduate course.
- F = (Fail) Course requirements have not been met. Credits are not earned by the student.
- I = Incomplete grade is issued with approval by the faculty and the Records Office. Coursework was passing at the time. Completion of coursework and grade conversion must follow the academic policy in effect.
- CR = Credit by passing challenge examination.
- S = Satisfactory performance (for project/thesis/practicum courses only). Credits are earned by the student.
- P = Pass without credit. Student passed the course which was offered on pass/no-pass basis.
- NP = (Not pass) Student did not pass the course which was offered on pass/no-pass basis. No credit was earned.
- IP = (In progress) performance is satisfactory, but a final grade is not yet assigned.
- AU = (Audit) Student was enrolled on a non-credit basis.
- W = (Withdrawal) Student drops a course after the add/drop deadline.
- NC = (No credit) The student did not pass a challenge examination. Prior to May 1998 the grade NC might also be issued to a student taking an ESL course.
- U = (Unauthorized withdraw) The student did not withdraw from the course but failed to meet attendance and course requirements. “U” grade equals “F” grade.
- * = Course has been repeated.

Grades assigned by each course instructor conform to individual policies as stated in the published course syllabus. A grade submitted by an instructor is considered final and may be changed only for one of the following reasons:

1. Error in recording a score for a student product (test, quiz, paper, etc.)
2. Miscalculation of a score, including the cumulative score for a semester.
3. Omission from consideration of valid student products that were submitted in time.

No other reason constitutes a basis for a request for grade change. All requests for grade changes must be submitted to the Records Office within two weeks following the date of issuance of the grade in question. Under no condition will a grade change be permitted after a degree has been awarded. A grade will not be changed after one semester from the date of its issuance unless it has been repeated.

- Passing Grades

1. Undergraduate Programs

   In each undergraduate program, the passing grade for courses taken at NPU is D- or better.

2. Master’s Degree Programs

   In each master’s degree program, C- is the passing grade for each course taken to earn credit towards graduation. “A” to “D” level grades earned from undergraduate level courses or preparatory module courses to clear background deficiencies are considered meeting the requirement.
3. **Doctorate Degree Programs**
In each doctorate degree program, the passing grade for all courses taken to meet the degree requirements must be B- or better.

- **Grade Point Average (GPA and CGPA)**

The grade point average (GPA) is based on courses in which letter grades are earned. Instructors may add plus (+) or minus (-) options to letter grades in order to refine evaluation procedures. GPA may be calculated on semester base or cumulatively (CGPA). CGPA is calculated based on all courses and grades earned to meet a degree program’s graduation requirements. To compute the GPA or CGPA, divide the total number of grade points by the total number of units attempted in courses receiving letter grades. Use the table for grade point assignments.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>0.7</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
<tr>
<td>U</td>
<td>0</td>
</tr>
<tr>
<td>NP</td>
<td>0</td>
</tr>
<tr>
<td>NC</td>
<td>0</td>
</tr>
</tbody>
</table>

All other grading symbols receive no grade points, and units for those courses are excluded from computation for GPA or CGPA.

- **Incomplete**

In order to receive a grade of “I”, a student must have completed all homework and tests/quizzes to date, passed the mid-term exam, and have serious and compelling circumstances beyond the student’s control that occur within the last two weeks of the semester preventing the student from taking the final exam or submitting the final project. Issuance of an “I” grade requires approvals from both the course instructor and the responsible Records Officer.

If approval is granted, an “I” grade will be issued to the student. The “incomplete” work must be made up and a final grade issued by the instructor by the end of the 4th week of the following semester. An “F” grade will be issued to the student if an “I” grade is not cleared within the 4-week deadline.

- **Auditing Courses**

A student may audit a course instead of enrolling for credit. No credit is earned by the student and the grade symbol of “AU” is received by the student for auditing a course. NPU views auditing classes as an opportunity for students and alumni to review courses previously taken or to become informed about current information on a subject. The following categories of courses cannot be taken with auditing status: CPT (practicum), ESL, lab courses, and project courses.

Priority will be given to students enrolled in a class for credit toward graduation. When enrollments in a class exceed the class limit, the University reserves the right to remove auditors from the registration list and refund tuition paid for the class.

A student may change his/her status from audit to credit or from credit to audit by the add/drop deadline by conducting a regular ADD/DROP process.

**Attendance:** A student enrolled in a class on audit status must observe the NPU attendance policy and rules set by the instructor although the student is not required to do homework or take exams given to the class.

- **Repetition of Courses**

A student may repeat a course due to several reasons: (a) To meet the graduation requirements on CGPA, (b) To earn a better grade for a subject, or (c) To gain a better understanding of the subject. In such cases, both grades will appear on the student's permanent record, but only the latest grade earned for the same course will be calculated towards the student's cumulative grade point average. When repeating
a course, the student pays at the regular tuition rate.

1. **Undergraduates**
For purposes of academic renewal, any course taken to meet graduation requirements in which a failing grade was earned must be repeated.

2. **Graduates**
Master’s degree students who receive a grade of D+ or below in a course taken to meet graduation requirements must repeat the course. Such a repetition is permitted for purposes of academic renewal. Doctoral students who receive a grade of C+ or lower for any graduate course taken towards their doctoral degrees must repeat the course.

### Form of Instruction

NPU offers its courses primarily “on-site” in traditional classroom setting and labs at the NPU campus in Fremont, California. A limited number of business courses are offered online as an alternative form of instruction through the NPU Online platform in parallel with the regular in-class courses. Refer to the section on “Taking Online Courses” below for information concerning this instructional delivery mode.

### Attendance

**Attendance in class is required** for all students, including those “auditing” a course. Students must attend all class meetings with the exception of an emergency or illness. Responsibility for class attendance rests with the individual student, and since regular and punctual class attendance is expected, the student must accept the consequence of failure to attend.

**Taking Online Courses**: Students taking online courses must follow the course requirements to participate in the weekly activities, including but not limited to reading assigned materials, interacting with the instructor and classmates using the online tools, doing homework and/or projects, and conducting research. All online activities are recorded for evaluation purposes.

In case of emergency or illness, the student must notify the instructor and the Administration Office via either email, online request (the NPU Online Service Center), or phone call as soon as possible.

### Taking Online Courses

The University offers a limited number of courses in online delivery mode as an alternative to those in in-class mode. These courses are open only to regularly admitted NPU students. There will be no additional fees or charges associated with the verification of student identity at the time of enrollment in online courses.

Online learning normally requires a great deal of self-discipline.

NPU Online courses are similar to residential courses with regard to learning objectives, credits earned, and course duration; however, they are different with regard to the type of activities and interaction required of the student.

- **Online Learner Authentication**
  The NPU administration provides a secure login and pass code at the time of enrollment to each student enrolled in an online course for the purpose of student authentication and verification of identity throughout the course.

- **Online Course Environment**
  Currently NPU uses Moodle platform as a base to develop its online course management system for students taking online classes. Customized and developed features include but not limited to: online testing and test bank enhancement, online discussion board enhancement, integration of McGraw Hill Campus e-Library, Youtube.com integration. This industry-standard distance education platform is further customized with NPU’s professionally designed logo and display interface. The student may access the NPU online course management system via a web browser.

- **Online Student Equipment**
  Online student equipment includes a computer, software, and Internet service which must satisfy the following specifications:
1. **Minimum Requirements for Computer Hardware**

In order to take online courses, the student must have computer hardware meeting all the following minimum requirements:

- **CPU:** Intel® Core™ 2 Duo or AMD Phenom™ II or equivalent PC-compatible, (Macintosh or Linux-based machines are not supported), 1.8GHz processor speed (or greater),
- **Peripherals:** Keyboard, Mouse, Speakers, Headphone, Microphone, Web Camera,
- **Display:** Super VGA (800x600 or higher resolution),
- **Hard Drive:** Minimum 10Gb free space,
- **Computer Memory:** At least 2G RAM,
- **Sound Card:** Sound-Blaster-compatible sound card.

2. **Minimum Requirements for Software**

In order to take online courses, the student must have all the following software tools:

- **Operating System:** Microsoft Windows Vista (or higher),
- **Internet Browser:** Microsoft Internet Explorer 7.0 (or higher),
- **Adobe:** Acrobat Reader 9.0 (or higher)
- **Microsoft Office:** Microsoft Office Professional 2007 (or higher).

3. **Minimum Requirements for Internet Service**

In order to take online courses, the student must have DSL broadband connection or Cable broadband connection service available to him/her and is responsible for all the expenses associated with such services as well as all the required computer equipment as needed.

4. **Other Requirements**

- **E-mail Account:** NPU provides free email services to all students taking online courses.

**Writing Ability:** Students taking online courses are required to have passed the admission requirement in English.

- **Prerequisites**

NPU students wishing to enroll in an NPU Online course will be required to (1) have acquired English writing ability, (2) complete an online Self-Assessment survey, (3) pass an orientation workshop and test, and (4) read the NPU Online Student Handbook. Items (2) and (3) are conducted online to help assess the student’s readiness for taking online courses. A face-to-face or telephone interview of the student by an administrative counselor may be used to further assess the student’s qualification for taking the online course. The extensive orientation will help determine whether an NPU online course is the right choice for the student.

- **Weekly Activities**

The NPU Online courses are designed for the students to learn and proceed on a weekly basis; all assignments and learning materials are laid out on a weekly schedule and the students must complete the weekly work on time in order to proceed successfully. To succeed, the individual must participate in all activities required for the online course.

- **Class Participation**

Online class participation activities of each student enrolled are recorded electronically by the online program and by the instructor. In addition to weekly reading and homework assignments, there are other activities including discussion board and messaging. The instructor has the option to use webcasting or interactive audio/video communication for additional activities. Among these activities, webcasting requires the real-time participation of all parties.

**Taking Exams:** The instructor of an online course determines how to conduct the exams for the course.

Students enrolling in an NPU Online course will not be allowed to transfer or “migrate” to the equivalent residential course once the semester has begun (students may add and drop to make the switch by the add/drop deadline only).
International Students: According to the government’s rules for international students, an international student is not allowed to take more than one online course in any term, and the online course can not be the only course taken by the student in any term.

Online Information: Refer to the “NPU Online” website for detailed information related to taking online courses.

❖ Standards of Satisfactory Progress (SSP)

NPU has a policy on satisfactory academic progress that measures whether students are maintaining satisfactory academic progress in their educational program. It requires each student to meet the minimum qualitative and quantitative components of the standards. When the student fails to maintain the standard at various checkpoints, the student will be placed in one of the following statuses: On Academic Probation, Dismissal, or Extended Enrollment.

There are two primary factors affecting the student’s academic status: [1] Cumulative Grade Point Average (CGPA – refer to the subsection on GPA and CGPA in the section on Grading Policy and Academic Standards) and [2] Percentage of successful course completion of courses attempted.

Although currently NPU does not offer any government financial aid program, the term “financial aid” may be mentioned below for students’ information purposes. In order to state NPU’s policy of satisfactory academic progress, the terms of “Maximum Program Length” (MPL) and “Academic Year” must be defined:

- Maximum Program Length (MPL)

Program length is the number of units required for the student to complete his/her program. It is determined at the time when the student’s admission evaluation has been made. The maximum program length is equal to 150% of the program length. The student is expected to successfully complete his/her degree program within his/her MPL in order to receive the academic credential/degree he/she is pursuing.

- Academic Year

A period of two (2) semesters is equivalent to one (1) academic year in evaluating the academic progress of a student.

- Evaluation Points in the Student’s Academic Program

A student is evaluated at the end of every semester and, at this point, the student’s CGPA determines whether the student should be placed in academic-probation status. In addition, at the checkpoints listed in the tables below, the combination of CGPA and the percentage of successful course completion of courses attempted determines whether the student maintains satisfactory academic progress or not. Each table shows that the required minimum percentage of successful course completion versus courses attempted increases as the student earns an increasing number of credits in the program.

- Meeting Standards of Satisfactory Progress (SSP)

A student is considered meeting the standards of satisfactory progress if meeting the following requirements:

SSP Chart for Undergraduate Students

<table>
<thead>
<tr>
<th>Evaluation Point (end of period)</th>
<th>Min. CGPA</th>
<th>Min. Successful Course Completion % of Courses Attempted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st academic yr</td>
<td>2.0</td>
<td>55%</td>
</tr>
<tr>
<td>2nd academic yr</td>
<td>2.0</td>
<td>60%</td>
</tr>
<tr>
<td>Subsequent yr</td>
<td>2.0</td>
<td>65%</td>
</tr>
</tbody>
</table>

SSP Chart for Graduate Students

<table>
<thead>
<tr>
<th>Evaluation Point (end of period)</th>
<th>Min. CGPA</th>
<th>Min. Successful Course Completion % of Courses Attempted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st academic yr</td>
<td>3.0</td>
<td>60%</td>
</tr>
<tr>
<td>2nd academic yr</td>
<td>3.0</td>
<td>65%</td>
</tr>
<tr>
<td>Subsequent yr</td>
<td>3.0</td>
<td>75%</td>
</tr>
</tbody>
</table>
• **Effect of Grades on Satisfactory Academic Progress:**

1. Units attempted but not completed include the following grades: Failing grades including F (fail), NC (not passing a challenge exam), U (unauthorized incomplete), W (withdraw), NP (no-pass), and * (course being repeated).

2. The grade CR (credit through challenge exam by undergraduates) counts as units attempted and completed. The grades A, B, C, D, and S count as units attempted and completed.

3. The grades of P (pass without credit), AU (audit), and non-credit courses do not count for credit attempted nor completed; they have no effect on the calculations of GPA, CGPA, or percentage of successful course completion. Examples of non-credit courses are: ESL (English as a Second Language) courses and business preparatory module courses (courses numbered as PBUS01 through PBUS04).

4. Credits transferred, performed at the time of admission evaluation, will reduce the maximum program length. The credit transfer policy is observed for both new students and current students changing program of study or seeking to earn an additional degree at NPU. Credit transferred from any outside institution is excluded from the program length and has no effect on the calculation of the student’s GPA or CGPA. Credit transferred into a program from previous credit earned at NPU is excluded from the program length, but the grades are transferred along with the credit; they are included in the calculations of the student’s CGPA if the student changes program within the same school.

5. Taking Deficiency Courses: A graduate student may be required to take undergraduate course subjects to clear background deficiencies. These course units are included in the student’s program length and affect the MPL; the credits and grades of these courses do not affect the student’s CGPA.

• **Academic Probation**

The following students are placed on academic probation:

1. In any semester, an undergraduate student’s CGPA is below 2.0, or a graduate student’s CGPA is below 3.0,

2. Students who fail to meet the Standard of Satisfactory Progress at checkpoints listed in the two SSP charts above.

• **Maximum Terms of Academic Probation**

1. Bachelor’s and Master’s Degree Students: A student placed on academic probation the first time or in a semester following a successful semester must remedy the condition within two semesters. Otherwise, the student is dismissed from the study program. A student placed on academic probation for two consecutive terms must remedy the condition in the following semester. Otherwise, the student is dismissed from the study program. A student who receives VA education benefits and does not clear the probationary status within two semesters will be disqualified for VA education benefits and dismissed from the study program. In such an event, both the authorizing VA office and the student will be notified.

2. Doctoral students: Refer to the Doctorate Degree Programs.

Rule Related to Financial Aid (for information only): A student receiving federal financial aid who does not meet the CGPA standards at the end of the second year will no longer be eligible for financial aid, may not be placed on probation, and must be dismissed, unless the student wishes to continue without being eligible for federal financial aid. However, a student not meeting the CGPA standards at the end of the second year may remain as an enrolled student who is eligible for federal financial aid if there are documented mitigating circumstances (i.e. death in the family, sickness of the student, etc.).
• **Mitigating Circumstances**

When the institution grants a student’s appeal for mitigating circumstances, the student will be placed on a specified period of probation and will be considered making satisfactory academic progress during that period. The Counseling Committee makes a decision on the specifics of such a grant.

• ** Removing Academic Probation Status**

A student who is able to remedy the condition and reestablish satisfactory progress within the terms specified in the above section of Maximum Terms of Academic Probation will be removed from academic probation. Observations will be made on the student every semester thereafter.

• **Dismissal:**

A student placed on academic probation who is unable to remedy the condition described in the above section on Maximum Terms of Academic Probation will be dismissed from his/her program of study. These students are not eligible for financial aid (information only).

• ** Academic Evaluation of Students Placed on Academic Probation or Dismissal**

An academic evaluation of the student placed on academic probation or dismissal will be conducted by an Academic Counselor or a Counseling Committee formed by more than one Academic Counselor. The purpose is to determine if the student has the desire and the academic ability to progress satisfactorily in the program. If the Academic Counselor or the Counseling Committee finds that the student lacks the desire or ability to progress satisfactorily, the student will be referred to another institution with a learning environment more suitable for the student.

• ** Extended Enrollment Status**

A bachelor’s or master’s degree student dismissed due to conditions specified in the section of “Dismissal” is allowed to enroll for an extended period of two semesters, provided the student’s evaluating counselor/committee has determined that the student has the desire and ability to progress satisfactorily and is making progress, and the student agrees in writing to the following: (1) The student is not eligible for additional student aid at NPU while in an extended enrollment status and is responsible for all financial arrangements with NPU, (2) the student is not enrolled in an eligible program for the purpose of student aid eligibility, (3) the student must seek to correct academic deficiencies by retaking and successfully completing previously failed course(s) in this extended enrollment period, and (4) when the government’s financial aid programs are in effect, under no circumstances will a student be granted a degree if his/her study in the program exceeds the maximum program length (MPL).

• **Filing Complaint of Academic Probation Status or Dismissal**

A student who has been placed on probation or dismissal and disagrees with the finding may appeal according to the grievance procedures set forth in this catalog and posted on the Online Service Center for the students. The Administration Office will hold a hearing and make a decision on the probation/dismissal. This procedure also applies to students who wish to appeal because of special or mitigating circumstances.

☐ **Examinations**

NPU has five different types of examinations:

• **Course Examinations**

Most courses at the University have at least two examinations in a semester: a midterm and a final. These examinations may be comprehensive or partially comprehensive, so students need to ascertain from their instructors the precise scope of the examinations. Course examinations can consist of information found in the textbook, outside reading, and the lectures; thus, students should review and synthesize all of the course material. Furthermore, the structure of course examinations can be a combination of essay, multiple-choice answers, and short answers. At the end of each semester, the students are required to take final examinations.
Examination for Challenging a Course

NPU recognizes that exceptional undergraduate students, by reason of independent studies, overlapping coursework, or work experience, may have achieved the learning objectives of a course. Therefore, undergraduate students with the course background may petition to receive credit for the course by completing a “Challenge Examination”.

Students wishing to challenge a course by examination must enroll for the course and pay tuition fees in the same manner as courses to be completed by regular class attendance. The course to be challenged must be listed on the schedule of classes for the semester. A formal online petition, via the Online Service Center, for challenge must be submitted to the Records Office at the time of registration, which must be before the beginning of the semester. Permission from both the instructor and the Records Office is required.

Earn Credit:

The student must complete the examination before the semester starts for the course credit to be effective for the new semester. The instructor giving the examination grades the test and determines whether the student passes the test or not. A grade of credit “CR” is assigned for passing the test; otherwise, the grade is no credit “NC”. The student may choose to stay in the class and complete the course work for a letter grade at the end of the term. Students who fail the challenge examination must attend the class.

Please note: Only challenges to curriculum-required courses are permitted.

How many challenge exams can you take? The maximum number of courses that may be challenged is five.

A fee per examination for the challenged course is charged to the student in addition to the course tuition.

Proficiency Examinations

Graduate students who have knowledge and experience of a background (undergraduate) subject but have not taken a course in the subject may clear the background requirement by taking a proficiency examination. The proficiency exam should be taken early enough to satisfy the “prerequisite” requirement for higher-level courses.

An undergraduate student may be required to take a proficiency examination on a major subject if the subject was taken more than ten years ago and the student has not had relevant experience in the subject for ten years.

New graduate students in the business program who took the following courses in foreign countries may be required to take proficiency examinations on these subjects: accounting, finance, economics, marketing, and business law.

Passing the Test: The instructor giving the proficiency examination grades the test and determines whether the student passes the test or not. A non-refundable fee is charged to the student for taking a proficiency examination. The student is allowed to apply for taking a proficiency examination on a subject only once. If the student misses a pre-scheduled proficiency examination, the exam fee is non-refundable and the student loses his/her chance of taking the examination on the subject.

Entrance Assessment Examinations

See the sections on English Proficiency Requirement and Entrance Assessment Tests for entrance placement examinations on English skills, SAT-I for freshmen, GMAT for applicants pursuing the MBA and DBA degrees, and GRE for those pursuing the DCE degree.

Teaching Assistance

Each semester designated administrative staff work with the faculty members to assign graders and Teaching Assistants (TAs) to assist faculty teaching and student learning in a number of courses. These services are provided by the school to the students free of charge. Students chosen to provide these services must have the heart for helping fellow students. They are required to attend an orientation program before the semester starts; they also receive their job descriptions and requirements information. The TAs are also instructed to observe the students’ study progress and performance and provide
feedback to the faculty and the administrators for improving the student services.

The TA/grader manager is responsible for managing these student workers to ensure that they fulfill their duties.

Graduation

● Bulletin Requirements

The NPU catalog serves as the school's contract with the students. Therefore, students fall under the graduation requirements written in the catalog used at the time of the student’s entrance to the program as a degree-seeking student. The section on “Study Plan” in “Academic Information” describes the rules for the student to follow for the graduation requirements.

● Petition to Graduate

As a student approaches the end of his/her undergraduate/graduate study, he/she must initiate a review process for the Records Officers to verify the student’s eligibility for graduation. The student must file an online petition one semester in advance - prior to his/her last registration – by using the NPU Online Service Center to submit this request. The Records Office staff will then make a graduation evaluation in time for the petitioner to register for the last time before graduation. The student will receive his/her evaluation report to confirm the courses left for him/her to complete in order to meet his/her graduation requirements. A graduation fee is charged for each graduation petition.

● Re-petition to Graduate

A student is required to resubmit the request and pay a re-petition fee after filing the original graduation request if any of the following occurs:

1. If the petition for graduation is denied.
2. If the student is unable to complete the rest of his/her coursework by the approved graduation date.
3. If the student decides to make a change to his/her graduation requirements by adopting the requirements specified in the current catalog (a new admission evaluation and study plan will be made for the student) which results in additional course work for the student.

4. If an international student wishes to enrich his/her knowledge and skills by taking courses in addition to the minimum graduation requirements beyond the approved graduation date, the student is required to enroll as a full-time student until his/her final graduation.

A re-evaluation of the student’s graduation requirements will be made and a new checklist will be provided to the student.

Students are responsible for compliance with the announcements and regulations specified in the catalog and with all policies, rules and regulations of the University. Upon completion of their study programs and fulfilling their financial obligations to the University, students are granted degrees and receive diplomas.

● Completion of a Program

The semester in which a student fulfills the graduation requirements, including course requirements, project completion (if applicable), and any financial obligations, is the semester the student graduates and is the date that is shown on the diploma.

The student will not have his/her degree awarded or diploma or transcript released until all university fees have been paid, library records cleared, and an online exit survey conducted.

Enrollment in the Last Semester: A student must be enrolled at NPU in the semester he/she graduates.

Withdrawal from the University

A student is considered “withdrawing” from NPU when any of the following occurs: (1) The student drops/withdraws from all courses enrolled in a semester when the student is required to remain enrolled to maintain his/her academic status, (2) The student submits an online request for “Withdraw from NPU”, (3) The student is terminated due to disciplinary issues, unsatisfactory academic performance, fees overdue, or violation of regulations required for international students, or (4) The student has
not enrolled at NPU for two consecutive semesters or more.

The student must clear his/her financial obligation to the school as well as his/her library records upon withdrawal from the University.

Withdrawal during the first week of a semester will not be recorded on the permanent transcript. For withdrawal after the first week and before the final exams, a “W” grade for each enrolled course is posted on the permanent transcript. A student withdrawing from the University without formal notification to the Records Office is subject to a “U” grade which is posted on the permanent transcript.

Refer to the “Refund Policy” section for the policy on refunds for students withdrawing from NPU. Students who withdraw from NPU without clearing their financial balances will not be issued their official transcripts.

- **Re-entry to NPU**

Any student who withdraws from NPU and is absent for more than one semester before resuming studies at a later date must submit a new Application for Admissions online, and the student falls under the admissions and graduation requirements in effect at the time of reentrance.

- **International Students**

International students who plan to transfer to another institution must follow the transfer rules published by the U.S. Citizenship and Immigration Services.

**EDUCATIONAL RECORDS**

Northwestern Polytechnic University has adopted the following policies and procedures regarding student records.

- **Definitions**

1. **Student:** any person who attends or has attended NPU.

2. **Education Records:** any record maintained by the school, which is directly related to a student; except: sole possession records, employment records, school security records, counseling records, and alumni records.

- **Student Rights**

Students have a right to inspect education records within forty-five days of submission of a written request to the registrar’s office, except for the financial records of the student’s parent and confidential recommendations to which the student has waived access. When a record contains information about more than one student, the student may only inspect the portion pertaining to the student.

Students may obtain copies of education records upon payment of a reproduction fee. However, NPU reserves the right to deny copies of education records if the student has an unpaid financial obligation to NPU, or if there is an unresolved disciplinary action against the student.

Students may request that NPU amend an education record that the student believes is inaccurate, misleading, or in violation of their privacy rights. All such requests must be made in writing to the registrar’s office, and clearly identify the part of the record that the student would like to amend and specify why the record should be amended. If NPU decides to not comply with the request, NPU will notify the student of the decision, advise the student of his or her right to a hearing, and provide additional information regarding the hearing.

- **Directory Information**

NPU may at its discretion disclose the following types of directory information without consent: name, address, email address, phone number, birth date, birth place, major field of study, participation in recognized activities and sports, dates of attendance, degrees, honors, and awards received, the most recent previous educational institution attended, and photographs.

Upon receipt by the registrar’s office of a written request to withhold directory information, NPU will withhold disclosure of all directory information indefinitely. Please note that in such circumstance (1) the student’s information will not appear in any commencement materials, (2) NPU will inform employers, credit card companies, scholarship committees, and other
requesters looking to verify enrollment or degree information that NPU has no information available about the student’s attendance at NPU, (3) NPU has no duty to contact the student to request permission to release the directory information, and (4) NPU shall not be responsible or liable for any consequences arising from or related to withholding directory information. A student may revoke the hold by submitting a written request to the registrar’s office.

Disclosure

In addition to directory information, NPU may release, without prior written consent, information from an education record to school officials with a legitimate educational interest. Education records may also be shared with parties outside of NPU in certain circumstances, including, for example, (a) to other schools, in which the students seeks or intends to enroll; (b) to federal, state, and local authorities in connection with certain state or federally supported education programs; (c) to DHS or ICE in connection with SEVIS requirements; (d) to accrediting agencies; (e) to parents that claim the student as a dependent; (f) in connection with financial aid; (g) to comply with a judicial order or lawfully issued subpoena; (h) to appropriate parties in a health or safety emergency; (i) the results from a disciplinary proceeding to an alleged victim of a crime of violence or sexual assault; or (j) to organizations conducting studies for or on behalf of NPU.

STUDENT DISCIPLINE

Inappropriate Conduct

Inappropriate conduct by students or by applicants for admission is subject to disciplinary action up to and including dismissal from or denial of admission to the university. The following is a non-exhaustive list of examples of inappropriate conduct:

(a) Academic dishonesty.

(b) Forgery, alteration, or misuse of campus documents, records, or identification, or knowingly furnishing false information to the University.

(c) Violation of any federal, state, or local law.

(d) Misrepresentation of oneself, another individual, or of an organization to be an agent of the university or another institution.

(e) Obstruction or disruption of the campus educational process, administrative process, or other campus function, whether on or off campus.

(f) Physical abuse on or off campus of the person or property of any member of the campus community or of members of his or her family, or the threat of such physical abuse.

(g) Theft of, or non-accidental damage to, campus property or property in the possession of, or owned by, a member of the campus community.

(h) Unauthorized entry into, unauthorized use of, or misuse of campus property; unauthorized entry into classes.

(i) On campus property, the sale or knowing possession of dangerous drugs, restricted drugs, or narcotics, except when lawfully prescribed pursuant to medical or dental care.

(j) Possession or use of explosives, dangerous chemicals, or weapons on campus property or at a campus function.

(k) Engaging in lewd, indecent, or obscene behavior on or using campus property or at a campus function, either in person or by correspondence.

(l) Abusive behavior directed toward, or hazing of, a member of the campus community.

(m) Violation of any order, rule, or policy of the University.

(n) Failure to cooperate with a university or police investigation.

(o) Endangering the health or safety of others on or from campus property.
Appeal of Disciplinary Action

A student has one week from the time of notification of disciplinary action to file an appeal. He/she may request an appeal of disciplinary action by writing a letter of response to the disciplinary action charges and requesting an appeals hearing. If the hearing is granted, based on the student’s reply letter, the individuals involved in the process will convene to hear the appeal. If an appeal is granted, the student may resume course work at NPU.

The following process must be followed to appeal a disciplinary action served to a student:

1) The appeal is made in writing to the Student Discipline Committee for presentation of any extenuating circumstances or evidence the student believes applicable.

2) The Student Discipline Committee then sets a hearing to review the appeal. The committee will be comprised of a minimum of three administrators. Copies of the appeal shall be distributed to each member of the committee prior to the hearing.

3) The student will meet with the committee to explain the appeal.

4) The committee will make its decision based upon the evidence presented and the interview with the student making the appeal.

5) The decision of the committee will be communicated to the student making the appeal within 48 hours of the final decision.

Student Grievance Procedures

Every student has access to a formal grievance process if so needed. If a student has a problem or concern of any nature regarding any aspect of NPU whether it is with personnel, course of study, or general university policies, s/he has the right to file a grievance. S/he is encouraged to communicate the concern in writing to the office in charge of student affairs. This office will act to bring a final resolution to the stated grievance. The following procedure should be observed:

Anyone with a grievance or complaint may request an individual conference with the appropriate instructor or staff member to discuss the problem. If a satisfactory resolution is not reached during step one, the aggrieved party should seek guidance from the office in charge of student affairs. If step two does not resolve the grievance, the aggrieved party should seek guidance from the Office of Academic Affairs. If this is not an academic issue, proceed to step four.

If the previous steps have not solved the grievance within 48 hours of the incident, the aggrieved party must present to the President, in writing, all facts of the grievance.

Within 24 hours, upon receipt of the written information, the President (or his designee) will schedule a Grievance Committee hearing. The time of the meeting will be communicated, in writing, to all concerned parties. All persons involved with the incident must be present at the time of the hearing. All parties involved will be given an opportunity to discuss the grievance. The discussion of the Committee will be communicated to those involved within 48 hours of the hearing. The Committee decision will be final.

The Accreditation Council for Independent Colleges and Schools (ACICS) provides procedures for the filing of complaints against accredited institutions. ACICS requires that the complainant has exhausted all complaint and grievance procedures provided under NPU’s policies. Should such a complaint be filed, ACICS will review the matter to determine whether there may have been a violation of its criteria and standards and can take action only if it determines there to have been such a violation. ACICS can be contacted at: 750 First Street, NE, Suite 980, Washington, DC 20002.

POLICIES AND STATEMENTS ADDRESSING THE INVESTIGATION AND TREATMENT OF STUDENTS, STAFF, AND FACULTY REGARDING SEXUAL HARASSMENT AND ASSAULT

It is the policy of the University to provide a work and study environment free of sexual
harassment. All students and employees should be aware that the University strongly disapproves of any conduct that constitutes sexual harassment and takes disciplinary measures to ensure compliance. All complaints are investigated and appropriate action taken. Deans, chairs and supervisors have an obligation to maintain a positive and productive work environment for faculty, staff, and students. They are expected to halt any harassment by calling attention to this policy or, if necessary, by taking more direct disciplinary action. When a situation involving sexual harassment is discovered, corrective action must be taken immediately. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual’s continuation at NPU or a grade in a class or other activity, (2) submission to or rejection of such conduct by an individual is used as the basis for a decision affecting such an individual, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual’s performance or creating an intimidating, hostile or offensive work environment.

It should be noted that sexually harassing behavior is not limited to overt physical aggression towards strangers. It can occur among acquaintances, friends, even lovers. In some cases it may not be maliciously intended; it may not even be conscious on the part of its perpetrator. Its undesirable consequences include mental and emotional stress or discomfort as well as occasional bodily harm. It is usually felt by its victims to be demeaning, or coercive, or punitive. As the National Advisory Council on Women’s Educational Programs reported to the federal government in 1980, the sexual harassment of postsecondary students is an increasingly visible problem of great dimensions, which is correctly viewed as a form of illegal sex-based discrimination.

In addition to its possible legal consequences and to the more direct form of mental, emotional, or physical anguish caused to its victims, in a community like ours sexual harassment can seriously interfere with freedom of educational or social opportunity. After an experience of sexual harassment by a faculty member, administrator, or fellow student, for example, or even after hearing of another’s experience, a student may be inhibited from electing a particular course, or from seeking a staff member’s assistance, or from attending a social function conducted by the school or the student organization. Thus, not only the student who is victimized, but also the whole social and educational community, is harmed by incidents of sexual harassment.

Although sexual harassment in any situation is reprehensible, it must be a matter of particularly deep concern to an academic community in which students and faculty are related by strong bonds of intellectual dependence and trust. Further, the vulnerability of undergraduates to such harassment is particularly great, and the potential impact on them is particularly severe. Not only does sexual harassment betray the special bond between teacher and student, it also exploits unfairly the power inherent in an instructor’s relationship to a student. We believe that reaffirmation of a firm stand against sexual harassment and the establishment of procedures specifically designed to resolve complaints of sexual harassment are extremely important for the University.

Treatment of Complaints

The Administrative Office will call for a special committee to handle harassment complaints. The committee’s treatment of complaints will be guided by the following principles, which are intended to protect the legitimate interest of all persons.

Next, committee members will decide if there is any conflict of interest that requires any of them to withdraw from consideration of the complaint. The committee will then decide on a course of action. Should the committee decide to take no action, the committee will inform the student and explain what, if any, other course of action the student might take.

Should the committee decide that the complaint requires formal institutional action (i.e. notification of the police) the committee will transmit the complaint directly to the President.

If a less serious complaint is judged to fall under the committee’s mandate, then one or more members of the committee, one of whom is a member of the faculty or the administration, will speak with the person(s) involved in order to
obtain further information and report the results to the committee.

The committee will limit its informal investigation to what it deems necessary to resolve the complaint or to make a recommendation to the President. Should it appear necessary for the committee to address any persons other than the parties involved in the complaint, the committee will do so only after informing the involved parties.

After review, the committee may decide (1) that there is no basis on which to pursue the complaint, or (2) that the complaint has been resolved, or (3) that the complaint is to be forwarded with recommendations to the President. The President will inform the committee of the final disposition of complaints forwarded.

One responsible member of the committee will be in communication with the student making the complaint until the complaint is resolved. The student will be informed of general actions taken, although not of specific conversations held with the person named in the complaint.

If either the person making the complaint or the person named in the complaint is not satisfied with the recommendations of the committee, she or he may discuss the matter with the President.

Sexual Assault

An allegation of sexual assault must promptly be reported to administration, who will, in turn, report the allegation to the Police Department. The University will not attempt to adjudicate allegations of felonious acts.

COMPLIANCE WITH THE REFORM ACT OF 1989

The University intends to comply with the Educational Reform Act of 1989. To this end it will publish the relevant specifications of the act in its student, staff and faculty handbooks and will urge its personnel to become familiar with such provisions of the Act as may apply to them or their duties and responsibilities. Personnel found in willful violation of the Act will face disciplinary action and may, in extreme cases, be permanently separated from the University.

STUDENT LIFE

Our mission at Northwestern Polytechnic University is to provide a welcoming and supportive environment for students, while maximizing their opportunities for career growth and personal development. We believe that student life is not only an integral part of the campus community but also a fundamental part of the educational process. Student services at the University are designed to meet the needs of our student body. These include both academic and non-academic issues and activities. Many of our students work part-time or full-time in local industries and come from a variety of social and ethnic backgrounds. As such, our services are tailored to meeting the needs and concerns of a mature and multicultural student body.

University Orientation

All new students are required to attend the new student orientation program offered before the beginning of each semester. Orientation packages are distributed to the new students prior to the orientation workshop; presentation materials cover essential information for the students, including the facility and learning resources information, administrative services provided to the students, and important rules and policies for the students to stay focused on their academic objectives. The staff advisors also assist the new students to register in classes. International students are provided a health insurance plan and information on particular regulations they must observe in compliance with the Federal regulations for international students.

All NPU students are welcome to attend the orientation to welcome the new students and receive current university information.

Housing Assistance

The University provides several types of housing units for the students to choose from. New students are given high priority to make their selections. However, certain housing units are assigned on a first-come-first-served basis. Students reside in the housing units with a full-semester commitment. Residents of student housing must be regularly enrolled, full-time NPU students. Room reservation is effective
only after the required rent and deposit have been received by NPU’s Housing Service team.

The NPU Housing Services also provides information on a variety of nearby, well-maintained apartments. The NPU website provides the housing service information and online application form.

New applicants to NPU who require housing assistance should submit their housing applications (online) at least two months before they report to NPU. Current students are also eligible to receive housing services by submitting requests online.

Although applicants are given the opportunity to express preferences and housing officers will make an effort to meet the applicants’ needs, no guarantee can be given that specific house, room, or roommate preferences can be met. It is recommended that students interested in dormitory living apply early to increase their chances of selecting desired units.

**Transportation Service**

Public transportation information is included in the Student Handbook posted on the Online Service Center. Airport pick-up service information is posted on the NPU website in the Student Services section under the Housing and Transportation Directory.

**Non-academic Counseling**

The Student Services Office offers assistance with personal and interpersonal issues such as relationships, cultural differences, assertiveness, and self-esteem. If a student needs a professional counselor, the Student Services Office will help the student find a suitable counselor. Additionally, the Student Services Office helps students with educational/vocational concerns such as coping with university life, academic performance, test anxiety, reentry adjustment, and determining life goals. Students are encouraged to seek assistance from a counselor in dealing with any problems that might affect their success at NPU.

**Culture Immersion Workshops**

The NPU student body reflects the international flavor of Silicon Valley. It includes both local and international students from more than twenty countries. To help international students adjust to the new environment, culture immersion workshops are conducted every semester and open to all interested students.

**Professional Development Seminars**

Offering professional development seminars is an integral part of the Student Services. The seminars are intended to enhance the students’ abilities in their professional lives – in cultural, communicative, and technical aspects. The seminar information is posted on the NPU website as well as the digital display board on campus. It is also e-mailed to the students each time.

**Intercollegiate Activities**

To broaden students’ learning experiences and interactions with other institutions, there have been exchange student activities with the School of Business and Information Management of Oulu University of Applied Sciences in Finland. Other international communities which refer students to NPU include universities in Kazakhstan, South Korea, Vietnam, Taiwan, and China.

Students are encouraged to initiate and participate in extracurricular activities to interact with other institutions and organizations for friendship building and community involvement.

**Career Placement Services**

As a key component of Student Services, career placement services help the students in the following areas: (1) Prepare resumes and sharpen interview skills, (2) Conduct career seminars and job fairs, (3) Identify the students’ strengths and interests and provide career advice, (4) Provide internship opportunities to the students, and (5) Provide library materials and an online tool (via the NPU Online Service Center) for the students to gain access to various sources of job-related information. The Career Center, in collaboration with the library, provides the students with access to a collection of books, articles, magazines, brochures, and videotapes about employment opportunities. The students may also use the computer facility in the Career Center for job searches. Employment
information can be found on the online job posting board through the eCareer Center on the NPU Online Service Center site.

The service provides career planning and job search assistance prior to and after students’ graduation.

Graduate students are encouraged to work with a Student Services Counselor on their resumes and career development plans in early stages of their academic study.

Student Handbooks

The NPU Student Handbook describes important policies and regulations that affect the students’ status at NPU. It also provides relevant information affecting the students’ lives during their studies at NPU.

The Student Handbook and the International Student Handbook are posted on the Online Service Center. In the New Student Orientation Workshop, the students are informed and receive handouts pointing to the online location for these handbooks. The handbooks complement the information contained in the University Catalog. All students are urged to read and refer to the information in the most current editions of both the student handbooks and the University Catalog - all available online.

The Student Association

The Student Association is organized by the student body. It enables students to maximize the social and educational aspects of their learning experience. The Association is governed by officers elected annually from registered students on campus.

The elected officers, with support from the student body, conduct extracurricular activities, such as field trips/tours, picnics, parties, sporting events, and intercollegiate activities. A designated administrator serves as the advisor to the Student Association.

Refer to the Student Association pages of the NPU website for information on the extracurricular events information.

Affiliation to Professional Societies

To expand and enrich student life on campus, NPU students are encouraged to get involved in a variety of professional organizations. Such involvement also takes the students a step closer to the professional world. Examples include activities sponsored by the IEEE local chapter and various other professional activities regularly held in Silicon Valley.

- NPU Student Branch of IEEE

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) is the world's largest technical professional society. A non-profit organization, IEEE promotes the development and application of electro-technology and applied sciences for the benefit of humanity, the advancement of the profession, and the well-being of its members. IEEE members participate in its activities in approximately 150 countries. The technical objectives of the IEEE focus on advancing the theory and practice of electrical, electronics and computer engineering and computer science.

NPU is proud to have a student branch of IEEE on campus and a group of students in the School of Engineering serves as the central committee to encourage participation of all students in IEEE activities. The participants are able to connect with the latest technical information, research, career opportunities, and a community of innovators who inspire the students to strive for success in their chosen profession. This connection enables the engineering students to have convenient access to valuable IEEE publications and participate in organized IEEE activities, particularly the ones held in Silicon Valley. Several faculty members serve as senior advisors to enroll the students.

- Business Students

Students in the School of Business and Information Technology are encouraged to join at least one of the following professional organizations or others:

- Institute of Management Accountants
- American Institute of CPAs
- California Society of CPAs
- United States Association for Small Business and Entrepreneurship
- Project Management Institute

- **Toastmasters Club**

Students interested in improving their public speaking skills are welcome to join the on-campus Toastmasters Club. The Club holds weekly meetings and is supervised by a designated administrator. A number of students in the club have participated in regional competitions and won awards.

Refer to the NPU website for more information.

- **Alumni Association**

The Alumni Association is made up of all NPU graduates. Playing an important role in the life of the University, the Alumni Association helps to build lasting ties between NPU graduates and the University, as well as broadens communication and mutual support among current and former students, faculty, staff, and the community. Members of the Association provide timely and invaluable input and advice to the University as well as current students on a variety of topics, including curriculum development, industry trends, student mentoring, and career development. As such, it serves as a crucial link between the academic community and the outside world.

- **International Student Health Insurance**

A health insurance plan is mandatory for all international students. An international student must carry a valid health insurance plan while enrolled at NPU. NPU contracts an experienced provider to carry a health insurance plan for international students.

**DONATIONS TO THE UNIVERSITY**

From time to time we receive calls from generous individuals, representing themselves or corporations, wishing to donate funds or items useful to the academic development of the University. We appreciate their consideration and altruistic action. Northwestern Polytechnic University enjoys tax-exempt status with the IRS; therefore, gifts of money and items of value are tax deductible. We encourage individuals to consult their personal or company tax advisors for details on how these gifts may benefit the giver as well as the University.
FACILITIES

Campus Description

In accordance with the University's curricular emphasis on technology and business, NPU's main campus is located in a high-technology R&D and business development area in southern Fremont, occupying eight modern research and development building complexes and their surrounding areas.

The University is close to highways I-880 and I-680, conveniently accessible from the highways via Mission Boulevard and Warm Springs Boulevard. The fully landscaped and abundant parking areas provide smooth traffic flow and easy building access; the peaceful neighborhood provides an appropriate learning environment for the students. All buildings are also accessible to people using wheelchairs.

The facilities support academic teaching/learning and research and development activities, administrative functions, and students' recreational activities. The buildings are equipped with central heating/air conditioning systems. The facilities include classrooms, laboratories, library, student study areas, student lunchroom and lounges, a Career Center, a Student Association office, teaching assistants service stations, recreation areas, conference rooms, administrative and faculty offices, and a business park.

Each classroom has a temperature control unit and is equipped with an LCD projector connected to an instructor's demo computer with access to the campus networks system and the internet, and a projection screen in addition to other standard classroom provisions. Overhead projectors and mobile TV/VCR sets are also available to the instructors. Designated staff prepare the classrooms before the classes start each day.

To expand professional quality sports facility services to the NPU members, the school may contract with nearby sports facilities to allow the NPU members access to its high-quality facilities with minimal cost.

Health, Security, and Safety

The University strives to provide students with a secure and safe environment. Classrooms and laboratories comply with the requirements of various government building codes, the Board of Health, and Fire Marshal regulations. Students are responsible for their own security and safety and must be considerate of other school members' security and safety. Security monitor systems have been installed on campus to increase campus security.

Teaching and Research Facilities

NPU’s teaching, research, and laboratory facilities are equipped with state-of-the-art hardware and software tools. In keeping pace with the advancement of information technology, NPU’s IT Department provides a modern digital campus environment to the faculty, students, and administrative staff.

To support teaching activities, classrooms are set up at the beginning of each semester based on the hardware and software requirements for each course. Modern design, simulation, testing, and ERP tools are installed for the instructors to use for teaching. Outside teaching resources may be set up to provide faculty members additional teaching and research tools. An example is the contracted McGraw-Hill Campus.

A number of classrooms are also equipped with computer systems and internet facility for the students to use. Practice laboratories are readied for the students to gain hands-on experience after class or in lab sessions.

Computer Networks: There are a variety of high-performance computers on campus to support teaching and learning, including high-capacity servers, advanced workstations, and modern PCs. Wireless and wired network connections for high-speed internet access are provided to the students on campus. The campus networks are connected to the internet via multiple T1 lines, allowing faculty and students access to electronic mail, file transfer, and the World Wide Web. Each student and faculty member has an individual computer account for accessing the NPU Online Service Center on or off campus, the intranet resources, and various servers.
Examples of modern CAD/CAE tools include the entire Cadence EDA tools suite, Synopsys Design Compilers, Xilinx and Altera design tools, Mentor Graphics tools, Synplicity and Lattice design and simulation tools, Specman tool, Vericity tool, Cilos tool, PSPICE and HSPICE simulators, SystemView, GSM Alliance Developer Program, VxWorks, ARM, MATLAB software packages, and MS Fortran PowerStation. XManager utility is also provided to support the students’ needs.

Examples of available computer science teaching and learning software tools and packages include Oracle server/client tools, Microsoft .NET Framework, Microsoft SQL server/client tools, Microsoft Visual Studio, JDK, MS Office, and various popular software QA and testing programs such as TUTOS, RTH, etc. In addition to the MS Windows system, Linux/Unix systems are also provided to the students for their learning needs. The embedded systems labs cover ARM, Windows CE, Linux MBED, Beagleboards, and the Android system.

In order to provide the business students a real-world enterprise environment to enhance their learning, SAP software is integrated into the business curriculum and the students gain hands-on experience with the software. The SAP Lab allows the students to practice SAP modules including accounting, financial management, project management, human resource management, marketing management, and operations management. Other accounting, auditing, and management tools are also provided to the students, such as QuickBooks, MS Project, SAS, SPSS, etc.

- e-Business, business logic design, and digital system development and implementation
- SAP (ERP, CRM, HR, PM, FIN/ACC, MKT, OM)
- Digital media and graphics

Other applications: The students also use the computer laboratory facility to do homework and projects in areas such as object-oriented design and programming, Unix/Linux system programming, Java programming, .NET web programming, .NET Windows programming, website design, e-business programming, software testing, digital media and graphics, business auditing, computer music, etc.

- The University Library and Digital Campus

The NPU administration strives to provide an up-to-date digital campus facility to the students and faculty to increase their learning/teaching effectiveness. The university library not only maintains traditional service functions but also provides commercially available digital libraries easily accessible online by the faculty and students.

The NPU Online Service Center (OSC) is the gateway for the faculty and students to access NPU’s unique online facility which the faculty members use to manage their courses, and the students access the OSC for learning resources, personal records, career information, library information, and submitting online requests to the administrative staff. The NPU OSC is maintained by the NPU IT Department.

- Library Services

The students are encouraged not only to learn from classes but also to pursue independent research by using resources provided by the library services. While NPU’s physical library has collections of books, journals, audio/visual materials, and other library items, its e-library subscribes to digital libraries, such as IEEE Computer Society Digital Library and ProQuest digital databases, which greatly increase the learning resources to its users. The library pages on the NPU website also incorporate sizable relevant information, conveniently provided by the vast World Wide Web, into the library’s online services, including links to the U.C. library system. For gaining access to other
controlled online resources requiring membership or licenses, the NPU library seeks solutions in two ways: (1) by directly joining memberships and/or purchasing licenses and (2) by referring the faculty and the students to the Dr. Martin Luther King, Jr. Library in San Jose which is co-managed by the San Jose City government and the San Jose State University. The Dr. Martin Luther King, Jr. Library has been awarded “Library of the Year” by the Library Journal. Several of its librarians offer workshops on research methodology and related subjects to the NPU students. A number of NPU students reside in the San Jose area and can benefit greatly from the wealth of collections at that library.

For the purpose of developing the students' professional skills, the collections at the NPU library and learning resource facility focus on electronics, computer, and business fields as well as general educational subjects. The NPU library provides the latest in resources for teaching and learning effectiveness. In addition to book items and audio/visual collections, the library subscribes to more than one hundred technical journals, magazines, and newspapers in business, sciences, and the electronics and computer areas.

Students are encouraged to keep abreast of developments in their fields by reading important professional journals. The University's collections are steadily increasing in order to meet the changing needs of the programs and curricula. Most books circulate for one month.

The book stacks area is stocked with open-shelf books and periodical collections, freely available to students, faculty, and staff. Library staff, as well as assistants in the library, are prepared to assist the visitors to the library.

The NPU Library welcomes suggestions from the faculty and students on new acquisitions.

In order to have access to more comprehensive collections, all degree-seeking students are encouraged to have library cards from other local major university libraries (e.g. University of California at Berkeley, San Jose State University, Stanford University, University of California at Santa Cruz, California State University at Hayward). Students can access many of these library systems via NPU's network system. NPU encourages its students to use these libraries in order to broaden their learning and conduct in-depth research.

♦ NPU Online Service Center for Faculty and Students

Faculty members use the NPU Online Service Center as a tool to help them manage their courses online, including posting/updating their course syllabi and handout materials, keeping their students’ academic and attendance records, and posting assignments and instructions to their students. The Teaching Assistants may access the system to post homework related information for individual courses. They also assist the faculty members by searching for useful learning materials or website links and include them in the posted course material for students’ use. Faculty members and the teaching assistants can also send messages to their students through this online facility.

Each current student is assigned a computer account to access the Online Service Center. The system is designed such that the student user can have access to all general information but only his/her own personal data and academic records. Using this facility, a student may obtain his/her course-related information, check his/her own study plan, financial records, and attendance records. The student may also update his/her personal contact data online.

Internet technology has been widely used to not only increase learning resources accessibility to the students and faculty but also help the instructors and the administrators to monitor the students’ learning progress online.

♦ Audio/Visual Aids for American Language Learning

Audio/visual materials for improving American language skills are available for all NPU students who wish to improve their communication skills. Students may use the selected audio and videotapes and software programs and workstations to improve English pronunciation, grammar, spelling, conversation, etc. Scheduled communication workshops and related activities conducted by English language instructors provide additional assistance to the interested students.
Audio/Video Taping

Students wishing to make video and/or audio recordings of lectures presented by NPU faculty members and/or visiting lecturers must obtain the written consent of the faculty members or lecturers. Students do not own any copyrights, etc., to such recordings.
ACADEMIC PROGRAMS

NPU’s undergraduate and graduate programs are designed to prepare students for the practice of electrical engineering, computer engineering, computer science, and business administration at a professional level. In particular, the degree curricula are designed to keep pace with the development of Silicon Valley’s major industries, including electronics, computer engineering, information technology, enterprise management, and global business development. As Silicon Valley is a dynamic and fast changing high-technology hub where the only constant is fierce competition among the employers, the employers in the Valley are more demanding on workers’ qualifications. Therefore, job seekers in the Valley are required to be well prepared in their background training and have the understanding that continued education is a general requirement in the workplace.

NPU’s program committees in various disciplines hold regular meetings to ensure that the curriculum design and facility support in hardware and software can meet the industry standards. Furthermore, faculty members who teach major and related courses must have had previous or current industry experience and are equipped with up-to-date knowledge and skills in their teaching subjects.

Degree programs are offered by two schools: The School of Engineering and the School of Business and Information Technology. Each School offers degree programs at three levels: bachelor’s, master’s, and doctoral levels. The following are program information divided by School and, within each School, by degree level.

SCHOOL OF ENGINEERING

The School of Engineering offers degree programs in three disciplinary areas: Electrical Engineering, Computer Systems Engineering, and Computer Science. Each discipline is headed by a program chair. The School Dean, program chairs, advisory committees, as well as the faculty members of the School of Engineering are responsible for the School’s academic affairs. Practical applications are emphasized throughout the students’ learning process although theoretical background is taught in each course subject as fundamentals.

Purpose

Degree programs offered by the School of Engineering are designed for students who intend to become professional engineers in the high-technology electronics or computer industry, as well as for those who desire a modern, general education based on the problems and the promises of a technological society. The environment in which students are educated is as important in shaping their future as their classroom experiences. The School of Engineering offers a friendly atmosphere and a variety of academic programs that have made NPU engineering graduates highly valued in high-tech firms and Bay Area communities.

Faculty

All NPU engineering faculty members possess the following qualities: advanced degrees earned in engineering and science disciplines, high-tech work experience, and enthusiasm in teaching and helping the students. Engineering is not a homogeneous discipline; it requires many special talents. Some faculty members in the School are goal-oriented designers, concerned with teaching students how to solve problems - how to synthesize relevant information and ideas and apply them in a creative, feasible design. Other engineering faculty members function more typically as method-oriented scientists, using the techniques of their disciplines in their teaching and research to investigate various natural and artificial phenomena.

Objectives

The course offerings and hands-on experiences offered to the engineering students aim to achieve the following objectives:

To provide each student a goal-oriented education by tailoring each student’s study
plan based on the student’s background and interests.

 To provide in-depth professional training with state-of-the-art learning resources to the student.
 To provide relevant laboratory experience throughout each program as an integral part of the education.
 To provide undergraduate students well-rounded and balanced undergraduate studies.
 To nurture a learning environment which leads to professional values recognizing high quality and integrity in a true engineer.
 To provide graduate students an opportunity to pursue advanced training and professional development to practice their profession with increased competence.

 Undergraduate Programs

The School of Engineering offers three undergraduate degree programs:

- Bachelor of Science in Electrical Engineering (BSEE);
- Bachelor of Science in Computer Systems Engineering (BSCSE);
- Bachelor of Science in Computer Science (BSCS).

 Credential Requirements

The undergraduate programs accept qualified high school graduates and college transfer students.

- Freshmen Applicants: Undergraduate applicants who have not completed at least 30 semester units of college credit are considered freshmen.

 Application Requirements

To apply for admission into a bachelor’s degree program, the applicant is required to submit the following to the NPU Admissions Office: (1) an Application Form (online), (2) a nonrefundable application fee, (3) official transcripts from previously attended colleges; freshman applicant is required to submit his/her official high school transcript and document certifying high school completion, (4) an English proficiency document is required for non-native English speakers: An official transcript with English course records or TOEFL/IELTS score report or equivalent will suffice. NPU’s English assessment exam, when available, can be taken by the applicant to meet this requirement. See English Proficiency Requirement below for detailed information on the English entrance requirement, and (5) Entrance assessment tests: SAT-I for freshman applicants. Applicants have the option to take the on-campus equivalent assessment tests. The scores are for reference purpose and will not affect the admission evaluation for the applicants. (6) Resumes are required for applicants interested in applying for scholarships.

- International Students: In addition to the above general application requirements, an international applicant is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

GED: NPU recognizes the General Educational Development (GED) tests and accepts the GED graduates.

 English Proficiency Requirement

Non-native English speakers are considered meeting the entrance English proficiency requirement if they meet any of the following requirements:

- Used English as the official language and completed study in a high school or college degree program,
- Has completed a college English credit course in an English speaking institution,
- Has submitted an official TOEFL or IELTS test score report to NPU and the score meets the entrance English requirement set by the NPU admissions office.
The TOEFL institution code for NPU is 9626.

Conditional acceptance may be granted to applicants whose TOEFL/IELTS scores or other equivalent records do not meet the above requirement but have reached intermediate level of the American Language classes (ESL) offered by NPU. These students will be required to enroll in ESL classes until they pass the advanced level ESL classes before enrolling in degree courses.

NPU’s English Placement Examination (EPE): An applicant may be offered the option to take NPU’s English Placement Examination in place of the standardized tests. The exam result affects the applicant’s admission status. A fee will be charged for this service.

NPU may accept the English assessment reports from a few U.S. English language institutions recognized by major universities in the U.S.

- Entrance Assessment Test

The entrance assessment test, SAT-I, is required for freshmen only and for reference purpose. The score will not affect admission evaluation for the applicants. Freshman students have the option to take the on-campus equivalent test in place of SAT-I before the new semester starts. The cost for taking the on-campus SAT-I-equivalent assessment test is $50.

NPU's Institution Code for reporting the SAT scores is 4335.

Students who are required to enroll in English as a Second Language (ESL) classes will be allowed to take the entrance assessment tests after they have passed the advanced level ESL classes.

- General Background Requirements for Pursuing Bachelor’s Degrees

Remedial courses are not offered at NPU except for English as a Second Language classes. Applicants to all programs are required to have completed pre-calculus subjects in algebra, trigonometry, and geometry prior to admission into any program.

- Transfer of Credit from Other Institutions

Course credit earned at other institutions of higher education may be transferable. Credit transfer is made by the admission evaluators while conducting the admission evaluation. The following statements apply to all transfer credits:

- The NPU Admissions Office must receive all official transcripts prior to the student’s joining a degree program. Without preapproval, transcripts received after the student joins NPU cannot be used in transferring credits, except for records from the term immediately preceding the student’s starting semester at NPU.
- The student was officially enrolled in the course.
- When evaluating any foreign transcript, the admission evaluators may accept or transfer credit based on their knowledge of the course contents in comparison with similar courses offered in the U.S.
- Courses for transfer to NPU may not be completed concurrently at another institution while attending NPU.
- College English courses taken at an institution where English is not an official language cannot be transferred for general education credit.
- The total credits transferred from other institutions to meet the student’s program requirements are limited to 80 semester units.
- Credits are transferred by the following conversion:

  - Definition of a Trimester/Semester Unit:

  One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

  - Conversion Factor:

  1 quarter unit = 0.66 trimester/semester unit

  - Grades Required for Transfer Credit
In the bachelor's degree programs, courses completed with passing grades are transferable in most cases. However, the Admissions Committee has the authority to make the evaluation on an individual basis and make its decision based on its expertise in credential evaluation.

- Other Types of Undergraduate Transfer Credit

The following other types of credit may be transferable:

- AP course credit earned which is considered to be equivalent to college credit.
- Credit by Examination - CLEP
- NPU grants credit to those students who pass examinations in English, natural sciences, humanities, and social science subjects offered by the College Level Examination Program (CLEP). Only General Education credits will be granted. Students should consult with the Admissions Office for information on acceptable CLEP scores and units. The CLEP Institution Code for NPU is 7569.
- Transfer of Credit from Defense Activity for Nontraditional Education Support (DANTES) and Military Services Credits will be allowed for DANTES Subject Standardized Tests and professional military education evaluated by the American Council on Education (ACE). The maximum transferable credits follow the same policies as specified above. NPU’s evaluation of an application is made prior to the student’s admission to a program unless otherwise approved by the authorizing VA office. The DANTES Institution Code for NPU is 9670.

Proficiency Exams: A student may be required to demonstrate proficiency in a subject taken more than ten years prior to application with NPU by successful completion of a proficiency examination.

- Tuition

Tuition is charged per unit. Tuition for courses taken to fulfill the undergraduate degree requirement is $330.00 per unit.

- Tuition per Unit for Courses Audited

For courses audited (without earning credit), the tuition is half the regular unit rate. Not all courses can be taken with “audit” status.

- Estimated Semester Cost of Tuition for a Full-Time Student

The tuition is $4,950 for an undergraduate student taking 15 units per semester.

- Graduation Requirements

Each program requires coursework in the following areas:

1. General education,
2. Major study, and
3. Electives.

An overall G.P.A. of 2.0 or better and a D- grade or higher on all courses towards the degree are required. The student must be in good standing with the University and have an approved petition to graduate on file.

1. General Education Requirements

All undergraduate students in the engineering programs must complete at least 39 semester units in general education (GE). GE courses cover subjects in the following areas: English and communications, humanities, engineering mathematics and natural sciences, and social sciences.

Examples of courses that fall under each area of general education are as follows:

A. English and Communications: Expository Writing, Speech, Communication, Composition, Creative Writing.
B. Humanities: Foreign Languages (excluding native language), Philosophy, Music Appreciation, Fine Art, Religion.
C. Mathematics and Natural Sciences: Calculus, Statistics, Physical Sciences, Physics, Biological Science.

2. Major Study Requirements
Each undergraduate program is designed to include a series of major study coursework. The courses provide the student the foundation and training in electronics and circuits, computer technology, and engineering mathematics and science areas.

**Professional Development:** The Professional Development course prepares the engineering students for their professional careers.

3. **Electives**

Electives are built in each program to promote breadth as well as depth in the study program. The student must complete a sufficient number of elective courses to meet the graduation requirements.

The following is a suggested study flow for the first five semesters of any undergraduate engineering program, followed by the description of the objectives and the graduation requirements for each undergraduate engineering degree program.

**Course numbers:** Courses numbered in the 100s and 200s are lower-division courses; courses numbered in the 300s and 400s are upper-division courses.

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- **GE and Lower-Division Courses Study Flow**
  (For all three undergraduate engineering programs)
  Suggested course sequence in the first five semesters:

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<tr>
<td>ENGL101</td>
<td>Expository Writing</td>
</tr>
<tr>
<td>IT200</td>
<td>Introduction to Computers and Digital Media</td>
</tr>
<tr>
<td>MATH201</td>
<td>Calculus – I</td>
</tr>
<tr>
<td>MATH208</td>
<td>Statistics</td>
</tr>
<tr>
<td>PHYS101</td>
<td>Introduction to Physical Sciences</td>
</tr>
<tr>
<td>CS200</td>
<td>Discrete Logic; required for BSCS program only</td>
</tr>
<tr>
<td>CS230</td>
<td>Introduction to Unix/Linux, and lab course CS230L</td>
</tr>
<tr>
<td>ENGL102</td>
<td>Critical Thinking</td>
</tr>
<tr>
<td>HU210</td>
<td>Introduction to Philosophy</td>
</tr>
<tr>
<td>MATH202</td>
<td>Calculus – II</td>
</tr>
<tr>
<td>ENGL115</td>
<td>Public Speaking</td>
</tr>
<tr>
<td>PHYS201</td>
<td>Physics – I, and lab course PHYS201L</td>
</tr>
<tr>
<td>MATH203</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>SOC201</td>
<td>California History</td>
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<td>Intercultural Communication</td>
</tr>
<tr>
<td>HU240</td>
<td>Music Appreciation</td>
</tr>
<tr>
<td>PHYS202</td>
<td>Physics – II, and Lab course PHYS202L</td>
</tr>
<tr>
<td>EE205</td>
<td>Fundamentals of Digital Electronics, and lab course EE205L</td>
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<tr>
<td>SOC245</td>
<td>Health Psychology</td>
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<tbody>
<tr>
<td>HU280</td>
<td>Principles of Ethics</td>
</tr>
<tr>
<td>MATH205</td>
<td>Differential Equations</td>
</tr>
<tr>
<td>SOC275</td>
<td>The American Experience</td>
</tr>
</tbody>
</table>

  Begin to take upper-division major courses and electives

---
The following are descriptions of the undergraduate engineering programs.

- **Bachelor of Science in Electrical Engineering (BSEE)**

**Objectives:** The Bachelor of Science in Electrical Engineering program is designed to provide the student with the analytic skills necessary for active problem solving and innovative applications. Analysis is concerned with the formulation and solving of physical and electrical models. The student learns engineering theory and uses industry standard circuit design tools to develop skills in practical approaches to real-world engineering systems and problem solving. After completing the undergraduate degree, a student is also prepared to enter an advanced degree program in an electrical engineering related field if he/she desires.

**Graduation Requirements:** A minimum of 136 units are required for graduation. They include the following:

1) **39 units of general education courses** including 12 units in English and communications, 9 units in humanities, 9 units in mathematics and natural sciences, and 9 units in social sciences,
2) **73 units of major courses,** and
3) **24 units of electives.**

### BSEE Curriculum
(Total of 136 units)

#### 1. General Education (minimum 39 units)

The purpose of general education is to give breadth to the student’s education. With a general background in English and communications, humanities, mathematics and natural sciences, and the social sciences, the student will be prepared for his/her roles both in society and at work. Students who have not completed the general education requirements upon entering a degree program at NPU are required to observe the following curriculum to meet the general education requirements.

(a) **English and Communications** (12 units)
(ENGL101 is a required course. Other listed courses are suggested subjects.)

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(b) **Humanities** (9 units)
(The following are suggested subjects.)

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</tr>
<tr>
<td>HU280</td>
<td>Principles of Ethics (3)</td>
</tr>
</tbody>
</table>

(c) **Mathematics and Natural Sciences** (9 units)
(MATH201 and MATH208 are required courses. PHYS101 is a suggested subject.)

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>PHYS101</td>
<td>Introduction to Physical Sciences (3)</td>
</tr>
<tr>
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<td>Calculus – I (3)</td>
</tr>
<tr>
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<td>Statistics (3)</td>
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</table>
(d) **Social Sciences** (9 units)
(The following are suggested subjects.)

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<tr>
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<th>Units</th>
</tr>
</thead>
<tbody>
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<td>SOC201</td>
<td>California History</td>
<td>3</td>
</tr>
<tr>
<td>SOC245</td>
<td>Health Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOC275</td>
<td>The American Experience</td>
<td>3</td>
</tr>
</tbody>
</table>

2. **Major Requirements** (minimum 73 units)
(Engineering mathematics and sciences, computer science basics, electrical and electronics engineering; a course to prepare students for professional career)

<table>
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<tr>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT200</td>
<td>Introduction to Computers and Digital Media</td>
<td>3</td>
</tr>
<tr>
<td>MATH202</td>
<td>Calculus – II</td>
<td>3</td>
</tr>
<tr>
<td>MATH203</td>
<td>Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH205</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS201</td>
<td>Physics – I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS201L</td>
<td>Physics Lab – I</td>
<td>1</td>
</tr>
<tr>
<td>PHYS202</td>
<td>Physics – II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS202L</td>
<td>Physics Lab – II</td>
<td>1</td>
</tr>
<tr>
<td>CS204</td>
<td>Program Design and Analysis in C Language</td>
<td>3</td>
</tr>
<tr>
<td>CS204L</td>
<td>C Programming Lab</td>
<td>1</td>
</tr>
<tr>
<td>CS230</td>
<td>Introduction to Unix/Linux</td>
<td>3</td>
</tr>
<tr>
<td>CS230L</td>
<td>Unix/Linux Lab</td>
<td>1</td>
</tr>
<tr>
<td>EE205</td>
<td>Fundamentals of Digital Electronics</td>
<td>3</td>
</tr>
<tr>
<td>EE205L</td>
<td>Digital Electronics Lab – I</td>
<td>1</td>
</tr>
<tr>
<td>CS350</td>
<td>Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS350L</td>
<td>Data Structures Lab</td>
<td>1</td>
</tr>
<tr>
<td>EE300</td>
<td>Circuit Theory – I</td>
<td>3</td>
</tr>
<tr>
<td>EE301</td>
<td>Circuit Theory – II</td>
<td>3</td>
</tr>
<tr>
<td>EE323</td>
<td>Logic Design</td>
<td>3</td>
</tr>
<tr>
<td>EE323L</td>
<td>Digital Electronics Lab – II</td>
<td>1</td>
</tr>
<tr>
<td>PHYS301</td>
<td>Introduction to Device Physics</td>
<td>3</td>
</tr>
<tr>
<td>BUS445</td>
<td>Professional Development</td>
<td>3</td>
</tr>
<tr>
<td>CS464</td>
<td>Software Design and Implementations</td>
<td>3</td>
</tr>
<tr>
<td>CS470</td>
<td>Network Engineering and Management</td>
<td>3</td>
</tr>
<tr>
<td>CS470L</td>
<td>Network Engineering Lab</td>
<td>1</td>
</tr>
<tr>
<td>EE450</td>
<td>Systems Analysis and Simulations</td>
<td>3</td>
</tr>
<tr>
<td>EE450L</td>
<td>Signal Analysis and Simulations Lab</td>
<td>1</td>
</tr>
<tr>
<td>EE461</td>
<td>Digital Design and HDL</td>
<td>3</td>
</tr>
<tr>
<td>EE461L</td>
<td>Verilog HDL Lab</td>
<td>1</td>
</tr>
<tr>
<td>EE468</td>
<td>Microelectronics Circuit Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EE488</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
</tbody>
</table>

3. **Electives** (minimum 24 units)

The student may select courses in any discipline to fulfill this requirement to promote breadth as well as depth in their study program. Course prerequisite requirements must be met. When applicable, the student may take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. Students interested in research and development work may select to enroll in the Senior Design Project course series and work under the guidance of a project advisor. Detailed course requirements for the Senior Design Project course series are posted on the Online Service Center.
**Bachelor of Science in Computer Systems Engineering (BSCSE)**

**Objectives:** The Bachelor of Science in Computer Systems Engineering program is designed to equip the student with a strong background in computer systems, emphasizing both hardware and software. The student acquires skills in the design and analysis of computer systems as well as develops skills for programming and designing software capable of solving scientific and engineering problems. After completing the undergraduate degree, a student is also prepared to enter an advanced degree program in a computer systems engineering related field if he/she desires.

**Graduation Requirements:** A minimum of **134 units** are required for graduation. They include the following:

1) **39 units of general education courses** including 12 units in English and communications, 9 units in humanities, 9 units in mathematics and natural sciences, and 9 units in social sciences,

2) **65 units of major courses,** and

3) **30 units of electives.**

**BSCSE Curriculum**  
(Total of 134 units)

1. General Education (minimum 39 units)

The purpose of general education is to give breadth to the student’s education. With a general background in English and communications, humanities, mathematics and natural sciences, and the social sciences, the student will be prepared for his/her roles both in society and at work. Students who have not completed the general education requirements upon entering a degree program at NPU are required to observe the following curriculum to meet the general education requirements.

(a) **English and Communications** (12 units)  
(ENGL101 is a required course. Other listed courses are suggested subjects.)

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<th>Course</th>
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<td>ENGL101</td>
<td>Expository Writing</td>
<td>(3)</td>
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<tr>
<td>ENGL102</td>
<td>Critical Thinking</td>
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</tr>
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<td>ENGL115</td>
<td>Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>ENGL210</td>
<td>Intercultural Communication</td>
<td>(3)</td>
</tr>
</tbody>
</table>

(b) **Humanities** (9 units)  
(The following are suggested subjects.)

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>HU210</td>
<td>Introduction to Philosophy</td>
<td>(3)</td>
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<td>HU240</td>
<td>Music Appreciation</td>
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</tr>
<tr>
<td>HU280</td>
<td>Principles of Ethics</td>
<td>(3)</td>
</tr>
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</table>

(c) **Mathematics and Natural Sciences** (9 units)  
(MATH201 and MATH208 are required courses. PHYS101 is a suggested subject.)

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(d) **Social Sciences** (9 units)
(The following are suggested subjects.)

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<td>California History</td>
<td>(3)</td>
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<tr>
<td>SOC245</td>
<td>Health Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>SOC275</td>
<td>The American Experience</td>
<td>(3)</td>
</tr>
</tbody>
</table>

### 2. Major Requirements (minimum 65 units)
(Engineering mathematics and sciences, electronics engineering, computer science and computer engineering; a course to prepare the student for professional career)

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<td>(3)</td>
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<tr>
<td>MATH202</td>
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<td>(3)</td>
</tr>
<tr>
<td>MATH203</td>
<td>Linear Algebra</td>
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<tr>
<td>PHYS202L</td>
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<td>CS204</td>
<td>Program Design and Analysis in C Language</td>
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<td>Introduction to Unix/Linux</td>
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<td>EE205</td>
<td>Fundamentals of Digital Electronics</td>
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<tr>
<td>EE205L</td>
<td>Digital Electronics Lab – I</td>
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</tr>
<tr>
<td>CS350</td>
<td>Data Structures</td>
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</tr>
<tr>
<td>CS350L</td>
<td>Data Structures Lab</td>
<td>(1)</td>
</tr>
<tr>
<td>CS360</td>
<td>Object-oriented Programming in C++</td>
<td>(3)</td>
</tr>
<tr>
<td>CS360L</td>
<td>Object-oriented Programming in C++ Lab</td>
<td>(1)</td>
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<tr>
<td>CS380</td>
<td>Operating Systems</td>
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<tr>
<td>EE323</td>
<td>Logic Design</td>
<td>(3)</td>
</tr>
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<td>EE323L</td>
<td>Digital Electronics Lab – II</td>
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<tr>
<td>BUS445</td>
<td>Professional Development</td>
<td>(3)</td>
</tr>
<tr>
<td>CE450</td>
<td>Fundamentals of Embedded Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>CE450L</td>
<td>Embedded Engineering Lab</td>
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</tr>
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<td>CS470</td>
<td>Network Engineering and Management</td>
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<td>CS470L</td>
<td>Network Engineering Lab</td>
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<td>EE461</td>
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<td>EE488</td>
<td>Computer Architecture</td>
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### 3. Electives (minimum 30 units)

The student may select courses in any discipline to fulfill this requirement to promote breadth as well as depth in their study program. Course prerequisite requirements must be met. When applicable, the student may take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. Students interested in research and development work may select to enroll in the Senior Design Project course series and work under the guidance of a project advisor. Detailed course requirements for the Senior Design Project course series are posted on the Online Service Center.
Bachelor of Science in Computer Science (BSCS)

Objectives: The Bachelor of Science in Computer Science curriculum is designed to provide in-depth professional training in a range of current computer science subjects, including structured programming, object-oriented analysis and program design, computer organization principles and industry-wide operating systems, database principles and applications, and principles of computer networks. It is designed to equip the student with both a theoretical background and hands-on experience. The curriculum provides training in software engineering and prepares the students for employment in computer software related areas, such as computer software design and development, and computer software applications in computer networks and Internet systems. The computer training will enable the students to work with computers as programmers, program and/or systems analysts, software engineers, computer systems administrators, database developers or administrators, Internet application software engineers, and technical program managers. After completing the undergraduate degree, a student is also prepared to enter an advanced degree program in a computer science related field if he/she desires.

Graduation Requirements: A minimum of 129 units are required for graduation. They include the following:

1) 39 units of general education courses including 12 units in English and communications, 9 units in humanities, 9 units in mathematics and natural sciences, and 9 units in social sciences,
2) 75 units of major courses, and
3) 15 units of electives.

BSCS Curriculum
(Total 129 units)

1. General Education (minimum 39 units)

The purpose of general education is to give breadth to the student’s education. With a general background in English and communications, humanities, mathematics, natural sciences, and the social sciences, the student will be prepared for his/her roles both in society and at work. Students who have not completed the general education requirements upon entering a degree program at NPU are required to observe the following curriculum to meet the general education requirements.

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(ENGL101 is a required course. Other listed courses are suggested subjects.)

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(b) Humanities (9 units)
(The following are suggested subjects.)

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<td>Principles of Ethics</td>
<td>(3)</td>
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</table>

(c) Mathematics and Natural Sciences (9 units)
(MATH201 and MATH208 are required courses. PHYS101 is a suggested subject.)

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<td>(3)</td>
</tr>
<tr>
<td>MATH208</td>
<td>Statistics</td>
<td>(3)</td>
</tr>
</tbody>
</table>
(d) **Social Sciences** (9 units)
(The following are suggested subjects.)

SOC201 California History (3)
SOC245 Health Psychology (3)
SOC275 The American Experience (3)

2. **Major Requirements** (minimum 75 units)
[Engineering mathematics, science, digital circuits basics, and computer science; a course to prepare for professional career]

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<tr>
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<th>Course Title</th>
<th>Units</th>
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<td>Introduction to Computers and Digital Media</td>
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<td>Calculus – II</td>
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</tr>
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<td>CS200</td>
<td>Discrete Logic</td>
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<tr>
<td>EE205L</td>
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3. **Electives** (minimum 15 units)
The student may select courses in any discipline to fulfill this requirement to promote breadth as well as depth in their study program. Course prerequisite requirements must be met. When applicable, the student may take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. Students interested in research and development work may select to enroll in the Senior Design Project course series and work under the guidance of a project advisor. Detailed course requirements for the Senior Design Project course series are posted on the Online Service Center.
Course Descriptions
Undergraduate Degree Programs, School of Engineering

For undergraduate programs, lower division courses are numbered in the 100s and 200s, and upper division courses are numbered in the 300s and 400s.

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Courses are listed by subject: Biological Science and Bioengineering, Business (General), Computer Engineering, Computer Science, Curricular Practicum, Electrical Engineering, English, Humanities, Information Technology, Mathematics, Physics and Physical Sciences, and Social Science.

Each course description is followed by its prerequisite information expressed in course numbers.

Each 1-unit lab course requires at least 2 hours of lab work each week. Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

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Bioengineering

BE450/G Introduction to Bioengineering (3 units)
This course presents an overview of the bioengineering and biotech fields. It is intended to build a solid foundation for students who are interested in exploring emerging bioengineering fields such as bioinformatics and biometrics. Topics include fundamentals of biology, cell biology, genes and proteins, molecular genetics, the impact of modern biology on science and medicine, biosensors, biochips, bioinstrumentation, computer-aided diagnosis and biometrics.

Prerequisite: MATH208

Business (general courses)

BUS400 Business Communication (3 units)
This course instructs and develops business communication skills that are essential for daily business and professional activities. Topics include professional memo writing, e-mail format and filing, business letters and correspondence, and business reports. Attention will also be devoted to improving students’ active listening, speaking and nonverbal communication skills.

Prerequisite: ENGL101

BUS445 Professional Development (3 units)
This course instructs the student to develop his/her professional career. Topics cover personality assessment, professional ethics, understanding the business professional world, recognizing company culture and organizational structure, how to survive office politics, career paths and pitfalls, resume writing and cover letters, and interview techniques.

Prerequisite: ENGL101

Computer Systems Engineering

CE305 Computer Organization (3 units)
This course is designed to provide a fundamental understanding of the issues and challenges involved in designing and implementing modern computer systems. The primary goal is to help students become more skilled in their understanding of computer systems, including how the hardware and software interact with each other. This course will also provide an understanding of where computers came from and where they are going, as well as understanding their strengths and weaknesses, such as why compiled code will always execute faster than JAVA code. Subjects will include: RISC vs. CISC CPU design approach, instruction sets, pipelining, instruction scheduling (branch prediction, speculative and out-of-order execution, etc.), cache, and storage hierarchy design. Additional key focuses will be on modern I/O architectures such as PCI, PCI-X, SATA, SCSI, USB, etc., and their importance on performance and compatibility.

Prerequisite: IT200

CE450 Fundamentals of Embedded Engineering (3 units)
This is the first in a series of embedded systems courses designed for students who are interested in learning real-time embedded systems and practicing real-time programming of embedded systems. Topics include hardware issues including platform, microprocessors commonly used in these systems and how a microprocessor works in such systems, concept of memory, registers, I/O; interrupt generation and handling in an embedded system; the concept of real-time programming, multi-task, concurrency, mutual exclusion; overview of real-time kernel/OS, drivers; system initialization and
startup, and debug issues. Hands-on exercises are required.

Prerequisite: CS380

CE450L Embedded Engineering Lab  (1 unit)
This is a drill course designed to be taken with the course CE450 Fundamentals of Embedded Engineering. The students gain hands-on experience with embedded systems programming and design. They are also guided to work on projects involving controller systems.

Prerequisite: CS380

Computer Science

CS200 Discrete Logic  (3 units)
This course is designed to introduce students to discrete logic concepts related to computer science and a broad spectrum of applications. Topics include logic set theory, Boolean matrix algebra, relations, structures, combinatorics, computational methods, elements of logic design, graphs theory and its applications to computer science and telecommunications, and design and analysis of efficient algorithms.

Prerequisite: Pre-calculus subjects.

CS204 Program Design & Analysis in C Language  (3 units)
This course is designed to teach C language syntax rules and the analysis of a structured programming language, with emphasis on practical applications in engineering and business problems. Methods of testing and debugging well-structured programs in C are also covered. Topics include problem specification and analysis, writing-editing-compiling-linking a C program, data types, operators and expressions, selection and repetition, arrays, pointers, functions, text files, dynamic memory allocation, strings, structures and unions, binary files, and bitwise manipulation and preprocessor directives. Hands-on exercises are required and the weekly lab session is an integral part of this course.

Prerequisite: IT200

CS204L C Language Lab  (1 unit)
This course is designed to be taken with the course CS204 Program Design & Analysis in C Language. The students learn to design and program in C language through practical hands-on exercises. They also learn to debug the codes, document programs, and test applications using Visual C++ tools.

Prerequisite: IT200

CS230L Unix/Linux Lab  (1 unit)
This course is designed to be taken with the course CS230 Introduction to Unix/Linux. The students gain hands-on experience with Unix/Linux commands, vi editor, Unix/Linux utility, Shell programming, security issues, and managing long files and customization of user environment.

Prerequisite: IT200

CS350 Data Structures  (3 units)
This course is designed to teach efficient use of data structures and algorithms to solve problems. Students study the logical relationship between data structures associated with a problem and the physical representation. Topics include introduction to algorithms and data organization, arrays, stacks, queues, single and double linked lists, trees, graphs, internal sorting, hashing, and heap structures. Hands-on exercises are required.

Prerequisite: CS204

CS350L Data Structures Lab  (1 unit)
This course is designed to be taken with the course CS350 Data Structures. C language - a structured programming language - is further investigated. Topics include pointer structure, structure and union, stack, queue, linked list, sort, binary tree, and heaps.

Prerequisite: CS204

CS360 Object-Oriented Programming in C++  (3 units)
This course is designed to develop the students' abilities to design, code, and document application programs using object-oriented design and analysis concepts and methodology. Emphasis is on establishment of design objectives, criteria and specifications, processes of synthesis, analysis, construction, testing, and evaluation of open-ended problems. Topics include an introduction to general object-oriented programming as implemented in C++, data types, expression, statements, functions, program scope, run-time memory allocation, function overloading, template functions, class mechanism, derivation, inheritance, and migration from C to C++. Labs may accompany lectures in partial class meetings during the semester. Hands-on exercises are required.

Prerequisite: CS204
CS360L Object-Oriented Programming in C++ Lab (1 unit)
This course is designed to be taken with the course CS360 Object-oriented programming in C++ to practice and develop the programming skills in C++.
Prerequisite: CS204

CS380 Operating Systems (3 units)
This course covers the fundamental concepts and implementation techniques of modern operating systems. Topics include processes, threads, concurrency, memory management, file systems, I/O systems, security, and OS virtualization.
Popular operating systems will be selected for case studies including Linux/UNIX, Windows, Android, and VMware hypervisors. Hands-on exercises and projects are required.
Prerequisite: CS204

CS385 UNIX/Linux Shell and Python Scripting (3 units)
This course covers the fundamentals of and techniques involved in UNIX/Linux shell and Python programming. Topics include UNIX/Linux shells (Bourne, Korn, C shell and bash), shell programming, and Python programming and environments, basic UNIX/Linux file system, and resource management.
The students will be able to write shell scripts to accomplish routine tasks for software development and testing.
Prerequisite: CS230

CS385L Unix/Linux Shell and Python Scripting Lab (1 unit)
This course is designed to be taken with the course CS385 Unix/Linux Shell and Python Scripting. The students gain hands-on experience with Shell scripting. Topics include Unix/Linux shells – Bourne, Korn, C Shell, and bash, shell programming, and Python programming, and network environment.
Prerequisite: CS230

CS453 Compiler Design (3 units)
This course is designed to give students a fundamental knowledge of compilers and interpreters for modern computer languages. Topics include a study of modern computer languages, regular expressions, lexical analysis, parsing techniques, context-free grammars, and syntax-directed translation. Hands-on exercises and trimester projects are required.
Prerequisite: CS350

CS457 Data Modeling and Implementation Techniques (3 units)
This is the first of a series designed to teach relational database concepts, design, and applications. Topics include database architecture, relational model, structured query language (SQL), data manipulation language (DML), data definition language (DDL), database design, ER modeling, database normalization, denormalization, and physical database design. Popular database systems, such as Oracle and Microsoft SQL server, are used for hands-on exercises and projects.
Prerequisite: CS204

CS457L Database Technologies Lab (1 unit)
This is a drill course designed to be taken with the course CS457 Data Modeling and Implementation Techniques. The students gain hands-on experience in database applications using popular database systems including Oracle database and Microsoft SQL server. They are also guided in working on database design projects.
Prerequisite: CS204

CS464 Software Design and Implementations (3 units)
This course is designed to use C/C++ to achieve the goal of teaching the students the design methodology for algorithm development. The objective is to develop the students' programming ability with proper logical and object-oriented thinking processes. The course covers two main topics: (1) Problem specification and analysis - understand the problem, analyze it, and translate the human thinking into a computer program; (2) Object-oriented design and analysis - understand data abstraction, encapsulation, aggregation, and inheritance. These concepts are the foundation for modern object-oriented programming languages such as C, C#, and Java. Hands-on practices are required.
Prerequisite: CS204

CS470 Network Engineering and Management (3 units)
This course is designed to introduce network communications. Topics include network layered models (OSI, TCP/IP), architecture, principles, service models and protocols; data communication basics, switching, routing, security, network management, and wireless and mobile networks. Modern Internet technologies and implementations are presented in case studies. Hands-on exercises are required.
Prerequisite: CS204

CS470L Network Engineering Lab (1 unit)
This is a drill course designed to be taken with the course CS470 Network Engineering and Management. The students learn network communications through weekly hands-on drill sessions. They learn protocols used in network data communication, routing design, and network management. The students will gain the experience of using popular routers and switches in their exercises.
Prerequisite: CS204
CS480 Java and Internet Applications (3 units)
This course introduces students to the Java language, programming with object-oriented construct, GUI design and graphics programming, and core Java libraries. Students will learn Java language basics such as syntax and classes, inheritance, interfaces, reflection, graphics programming, event handling, user-interface components with Swing, Java applets, exception handling, stream, and files. Hands-on exercises are required.
Prerequisite: CS360

CS480L Java Programming Lab (1 unit)
This is a drill course designed to be taken with the course CS480 Java and Internet Applications. The students gain Java programming skills through hands-on exercises in this weekly lab course. Weekly hands-on exercises normally correspond with the lecture material offered in each week.
Prerequisite: CS360

Curricular Practicum

CPT401 Curricular Practicum (1 unit)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have completed at least two semesters of coursework required in his/her degree program, obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. The student must use NPU’s online tool to submit his/her application for taking this course before meeting with a designated advisor for an assessment of eligibility. Information and instructions concerning this course are provided in the application form. This is a full-time practicum course taken by the undergraduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.
Prerequisite: Refer to the instructions on the application and agreement documents.

Electrical Engineering

EE205 Fundamentals of Digital Electronics (3 units)
This course is designed to be the first of the digital circuits 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 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. Laboratory experiments will accompany the class topics.
Prerequisite: MATH201

EE205L Digital Electronics Lab – I (1 unit)
This course is designed to be taken with the course EE205 Fundamentals of Digital Electronics. Topics include introduction to power and ground, basic IC chips with enable/disable control, implementing a 1-bit adder and connecting two 1-bit adders to create a 2-bit adder, measuring voltage and current
and power, connecting multiple outputs; divide by 2, 4 circuit; using the oscilloscope, design an oscillator using the 555, design a programmable mod-8 up/down counter, digital clock, IC UP decade counter with LS7447 and 7-segment display, D/A conversion design, memory writing and reading, and night rider design. 

**Prerequisite:** MATH201

**EE300 Circuit Theory - I** (3 units)
This course is the first of a 2-part series on the fundamentals of electrical circuits. Topics include analysis of circuits containing resistors, capacitors, inductors, and controlled sources; Kirchoff’s Laws; simple resistive circuits; node-voltage method, mesh-current method; Thevenin’s and Norton’s theorems; operational amplifier and its applications; transient analysis of first and second order circuits, and SPICE simulation. 

**Prerequisite:** MATH201

**EE301 Circuit Theory - II** (3 units)
This course is the second of a 2-part series on electrical circuits that covers advanced topics, including sinusoidal steady-state circuit analysis using phasors, power calculations in AC circuits, balanced three-phase circuits, Laplace transform and its application in transient circuit analysis, frequency select circuits and filters, Fourier series and Fourier transforms, and two-port networks. 

**Prerequisite:** EE300

**EE323 Logic Design** (3 units)
This course is a sequel of EE205 Fundamentals of Digital Electronics. It is intended to provide the students the opportunity to use the knowledge and experience acquired in previous digital circuit courses to further understand the design aspect of digital integrated circuits and devices. Hands-on design experience is provided in digital and logic circuits and their applications. The course focuses on various logic design techniques to design a variety of combinational and sequential circuits. Timing considerations are analyzed for asynchronous and synchronous circuit designs with emphasis on state machine design approaches. Students will be introduced to modern design techniques using HDL languages and concentration on verification of circuit designs. Simulation tools include Altera MAX+plus II, Xilinx Foundation, and Esproso. Students will use HDL tools in labs to design and verify various projects. 

**Prerequisite:** EE205

**EE323L Digital Electronics Lab – II** (1 unit)
This course is designed to be taken with the course EE323 Logic Design. Topics include introduction to Altera simulation tool and Verilog, decoder designs with various In/Out active levels, creating functional test patterns, BCD-7 Segment converter design and test in Verilog, download to PLD H/A and test, 1-bit adder design, 4-bit adder design, design a 4-bit ALU, design a parallel-in, serial-out shifter, Up/Dn counter designs, timing analysis using simulation, data encryption circuit, simple state machines, pure synchronous state machine design, clock counter, state-machine driving 7-segment output, and a final project design. 

**Prerequisite:** EE205

**EE450 Systems Analysis and Simulations** (3 units)
This course is an introduction to the basic concepts and principles of signals and systems. Both analog and digital signal processing techniques will be covered. Topics include analog signals and systems, digital signals and systems, LTI systems, Fourier transform, Z-transform, FFT, system stability, digital filter design, and network. Matlab software will be used to implement some of the DSP algorithms. 

**Prerequisite:** MATH205

**EE450L Signal Analysis and Simulations Lab** (1 unit)
This is a drill course designed to be taken with the course EE450 Systems Analysis and Simulations. The students gain hands-on experience with MATLAB and learn to use the tool to solve signals and systems problems. They also learn ADC and DAC design concepts as well as to use structured programming to work on a development board project. 

**Prerequisite:** MATH205

**EE461 Digital Design and HDL** (3 units)
This course develops the students’ ability to design commonly used basic building blocks of modern digital systems and provides them with a fundamental knowledge of the state-of-the-art design methodology, design considerations, and verification strategies for complicated digital hardware design. Topics include Verilog HDL basics, Logic modeling, state machine design and memory modeling using Verilog HDL. Additional topics on FPGA architectures, device vendors, FPGA design tools, FPGA applications and latest trend in the programmable logic industry are also covered. Students can use Verilog tools such as Synopsys VCS, Mentor Modelsim, Cadence NC Verilog, and Silo III Verilog Simulator from SimuCAD for their homework and design projects. Hands-on practice is required. Students are encouraged to take the HDL based sequence of courses EE461, EE510 and EE512 to gain knowledge and experience in semi-custom IC design using industry grade EDA design tools. 

**Prerequisite:** EE323

**EE461L Verilog HDL Lab** (1 unit)
This is a drill course designed to be taken with the course EE461 Digital Design and HDL. The students gain hands-on experience with Verilog simulation tools to learn logic design. They will have the chance to work on several design projects.
They will also learn the essentials of several popular scripting languages: Perl, Python, Unix/Linux Shell.

Prerequisite: EE323

EE467 Nanoengineering (3 units)
Recent development of the VLSI industry has significantly reduced its minimum feature size - to several tens of nanometers. This development necessitates carrying out engineering at the nanoscale, which demands an understanding of how electrons behave in nano-materials. A primary consideration is the electron's quantum behavior. Revolutionary discoveries of natural scientific phenomena, which had lead to the development of man-made devices and instruments of technology in the 20th century, is reviewed in this course. The special spin properties of the electron, and of the photon, are discussed to prepare the students for a further discussion on the topic. The recent emergence of spintronics, photonics, and quantum computing, as innovative technologies for the 21st century, are discussed. Field trips to leading high-tech companies and research laboratories in the Silicon Valley will be arranged for class members.

Prerequisite: MATH205

EE468 Microelectronics Circuit Design and Analysis (3 units)
This course provides an in-depth understanding of electronic circuit design and analysis at the transistor level. It is in preparation for studying more advanced analog or digital courses. The topics include differential and multistage amplifiers, current source and bias circuits, amplifier frequency response and feedback, output stages, operational amplifier, inverter, combinational logic, and sequential logic. The lab is run in conjunction with the course material and industry standard CAD tools are applied.

Prerequisite: EE301

EE488 Computer Architecture (3 units)
This course introduces the organization, design, and applications of modern computer architectures from both hardware and software perspectives. Topics include performance benchmark, instruction set (for both RISC and CISC), computer arithmetic, memory, parallelism (instruction, data, and thread levels), I/O and storage, multicore processors and programming and GPU (Graphics Processing Unit). Hands-on labs involving HDL and SPIM simulations, assemblers, linkers, and multithread programming are required to enhance classroom learning.

Prerequisites: EE461 and CS204

English

(GE in English and Communication area)

ENGL101 Expository Writing (3 units)
This course, while at the fundamental level of college writing, is based on a systematic approach to address students' needs to acquire knowledge and skills in written communication. It covers a full range of basic concerns in writing, going from its processes to its forms, to the popular techniques writers have used to make their works outstanding. With this course, students will learn to write as well as write to learn. By the end of the semester, the students should be able to use grammar and punctuation correctly and to write effective essays in both academic and professional settings.

Prerequisite: ESL401

ENGL102 Critical Thinking (3 units)
This course focuses on learning to be an effective provider and consumer of ideas in our information-saturated society. Students will learn to identify the intent of the message, to judge the soundness of the argument, and to evaluate the validity of the evidence. Rigorous training will help learners go beyond feelings and personal biases to clear, impartial, and accurate problem solving and decision making that are essential to all human communication: speaking, writing, debating, and persuading.

Prerequisite: ENGL101

ENGL115 Public Speaking (3 units)
This course is designed to develop effective skills in extemporaneous speaking, formal presentations, and listening. Students will learn about nonverbal communication, cultural differences in communication, and research methodology.

Prerequisite: ESL401

ENGL210 Intercultural Communication (3 units)
This is a course taught with lecture, readings, discussion, video viewing and guest speakers. It will turn you into a better communicator in an increasingly diversified workforce. With globalization becoming such a universal trend, everyone needs to know how to interact and stay in harmony with people of different cultural, ethnic and linguistic origins. Indeed, how to communicate in a "melting pot" like the U.S.A. today is an urgent concern both in theory and in practice. Much of the tension among countries, races and ethnic groups is caused by a lack of mutual understanding. This course will give you the kind of knowledge needed for this understanding. It will cover many interesting theories that will help you establish and maintain good social and work relationships across the borderlines of cultures and nationalities.

Prerequisite: ENGL101
ENGL220 Small Group Communication  (3 units)  
This course is designed to accomplish the following learning goals: 1) to help the students understand theories and principles of small group decision making and problem solving, 2) to provide students with hands-on experience working in small groups, the most powerful tool in modern industry, and 3) to offer students opportunities to observe the development and operation of real-life task-oriented groups. 
Prerequisite: ENGL101

Information Technology

IT200 Introduction to Computers and Digital Media (3 units) 
This is an introductory computer literacy course introducing the students to the basics of computer hardware structure, the World Wide Web, and MS Windows software tools. Topics include an introduction to computer components, input/output, data storage, the internet and the WWW, operating systems, data management, and a few Adobe Photoshop software tools. Students also learn to use the latest Microsoft Office tools – Word, Excel, Access, PowerPoint, and the use of the internet and browsers. Hands-on exercises are required. 
Prerequisite: ESL401

Humanities  
(GE in Humanities area)

HU210 Introduction to Philosophy (3 units)  
This course is an introduction to the great questions of philosophy, using an historical approach. The class covers Western and non-Western traditions from the pre-Socratic and Confucius to modern times. 
Prerequisite: ENGL101

HU230 Art Appreciation (3 units)  
A crash course in western art aesthetic from ancient art to post-modernism, this course gives the student a historical western art background that makes comparisons to the East, as well as the tools to analyze paintings through their own cultural point of view. 
Prerequisite: ENGL101

HU240 Music Appreciation (3 units)  
This course is designed for students to explore the fundamentals of music through easy listening examples from all aspects of sound: tone, color, harmony, rhythm, mood, dynamics, tempo, themes, and forms. Students will analyze music in respect to the historical and cultural context as well as to daily life. 
Prerequisite: ESL401

HU250 News Reading (3 units)  
This course will give students a skill that they will be able to use and benefit from for the rest of their lives: the ability to read and understand an English-language newspaper, magazine or other journalistic materials. It will enable the students to launch from their general English reading capability into a subject area which is more specialized and yet intimately woven with every-day happenings that concern and motivate every ordinary man and woman – the news reports. 
Prerequisite: ENGL101

HU280 Principles of Ethics (3 units)  
This course is designed to teach students ethical principles and problems applicable to their lives. Topics include application of ethical principles, background and philosophical principles of ethics, ethical practices, and practical ethical problems and solutions. 
Prerequisite: ENGL101

Mathematics

MATH201 Calculus - I (3 units)  
This course is the first of a series in calculus designed for students to build up the fundamental background of calculus and to learn its applications to very basic problems. Topics include functions, limits, continuous functions, derivatives and applications, antiderivatives, composite functions and chain rule, graphing techniques using derivatives, implicit differentiation, finite integrals, and fundamental theorems of calculus. 
(GE – in Mathematics area) 
Prerequisite: pre-calculus subjects.

MATH202 Calculus - II (3 units)  
This course is the second of the calculus series designed for students to understand integration techniques and extend the differentiation notion and methods to functions of multiple variables. Topics include logarithmic and exponential functions and their derivatives, inverse trigonometric functions and derivatives, L’Hospital’s rule, integration techniques and their applications, sequence, series, partial derivatives, and improper integrals. 
Prerequisite: MATH201

MATH203 Linear Algebra (3 units)  
Linear Algebra is one of the topics to prepare students for higher-level math courses as Differential Equations. It is also relevant to computer and business students interested in Data Science since linear problems are often the simplest models of the natural world. In this course students learn the language, concepts, and techniques, from the ground up; the course starts with geometric representation of systems by equations, and later
manipulation of abstract ideas as Singular Value Decomposition.

Prerequisite: MATH201

MATH205 Differential Equations (3 units)
This course is designed for engineering students to learn differential equations and their applications. Topics include ordinary differential equations at first, second, and higher orders; applications of ordinary differential equations in electrical circuits and motions, partial differential equations and boundary problems, eigenvalues and eigenfunctions, Green's function, and applications of partial differential equations in electromagnetic waves and scalar and vector potential problems.

Prerequisite: MATH202

MATH208 Statistics (3 units)
This course is designed for students to understand the concepts, theory, and applications of probability and statistics. Topics include permutation, combination, random variables, distribution, means and variance, normal distribution, random sampling, estimation, confidence interval, hypothesis testing, linear correlation and regression.

( GE – in Mathematics area)
Prerequisite: Pre-calculus subjects

Physics and Physical Sciences

PHYS101 Introduction to Physical Sciences (3 units)
This is an introductory course to expose the students to physical science subjects including the basics of astronomy, chemistry, earth science, and physics.

( GE-in Sciences area)
Prerequisite: Pre-calculus subjects

PHYS201 Physics - I (3 units)
This course is designed to be the first of a series in physics for engineering students. Topics include vectors, motion and Newton’s laws, gravitation, work and energy, momentum, mechanics of rigid bodies, oscillations, kinetic theory of gases, waves and sound, and thermodynamics. Laboratory practices are conducted formally each week.

Prerequisite: MATH201

PHYS201L Physics Lab – I (1 unit)
This course is designed to be taken with the course PHYS201 Physics - I. The student first learns to use general measuring equipment, the proper experimental procedures, and lab safety issues. The student is expected to gain skills in data analysis and lab report writing throughout the semester. Lab topics include measurements of position and velocity, kinematics, Newton's laws of motion, energy, momentum, conservation laws of energy and momentum, collisions, torque, rotational dynamics, waves, and thermodynamic behaviors.

Prerequisite: MATH201

PHYS202 Physics - II (3 units)
This course is the second of a series in physics for engineering students. Topics include Coulomb’s law and electric fields, currents and DC circuits, magnetic fields, time-varying EM fields, AC circuits, optics, interference, diffraction, and an introduction to modern physics. Laboratory practices are conducted formally each week.

Prerequisite: PHYS201

PHYS202L Physics Lab – II (1 unit)
This course is designed to be taken with the course PHYS202 Physics - II. The student learns to use electrical measuring equipment to conduct the first several experiments related to electromagnetism. Lab safety as well as skills in data analysis and lab report writing are stressed. Lab topics include measurement of electric field and potential, simple circuits, resistors, DC circuits, Kirchoff's laws, capacitors, RC circuits, magnetic effects, inductors, AC circuits, electromagnetic induction, RLC circuits, geometrical optics, lenses, and light as a wave.

Prerequisite: PHYS201

PHYS301 Introduction to Device Physics (3 units)
This course provides a basis for understanding the characteristics, operation, and limitations of semiconductor devices. The course covers the fundamental concepts of quantum mechanics, the quantum theory of solids, semiconductor material physics and semiconductor device physics. All of these components are vital to the understanding of both the operation of present day devices and future development in the field.

Prerequisite: PHYS202

Social Science

( GE – in Social Sciences area)

SOC201 California History (3 units)
This course is designed to expose the students to the uniqueness of California history and its evolution. Topics include the social, economic, and political development of the “Golden State” over the last three centuries, spanning the Native-American, Spanish, Mexican, and American periods. Lectures, case studies, and field trips for research are the forms of study in this course.

Prerequisite: ENGL101

SOC215 Introduction to Sociology (3 units)
This course provides a study of culture, social organization, and social relations. Additional topics include the major social problems in society, with an emphasis on how those problems are interrelated and the role of society in their creation and perpetuation. Issues and problems related to cross culture and diversity will also be addressed.

Prerequisite: ENGL101
**SOC235 Multiculturalism in the United States**  (3 units)
This course looks into various aspects of multiculturalism in American society, exploring issues related to race, ethnicity, gender, sexual orientation, disability, and other social group identities.
*Prerequisite:* ENGL101

**SOC245 Health Psychology**  (3 units)
This survey course will ask: What is health, how do you know you are well, when should you seek professional services, where do I find the right doctor, why should I take good care of myself, and whom do I go to and for what? Concepts and facts will be given to understand and apply to: the body and its systems, the brain and the mind, physical diseases, chronic pain, mental illnesses, personality disorders, sleep and relaxation, positive thinking, emotional intelligence, behavioral health, nutrition, exercise, health care treatments, alternative and complementary medicine, medications and adverse side effects, medical specialties, national costs, insurance, programs, aging and longevity, quality of life, dying with dignity, and healthcare providers ethics.
*Prerequisite:* ENGL101

**SOC250 Public Administration**  (3 units)
This course serves as an introduction to public administration. Early key thinkers in the development of public administration will be examined. During the semester, topics such as public policy formation, public management, human resources, reinvention, privatization, e-Government, public finance, performance measurement, and ethics will be reviewed. Students will become familiar with the primary issues and challenges facing public administrators today.
*Prerequisite:* ENGL101

**SOC260 Civilization and Urbanization**  (3 units)
This is an introductory course designed to cover the 5,000 year shift from rural to urban throughout the world. The city is civilization’s greatest work of art but has many challenges. The ancient walled cities, utopian writings, urban theories, religious experiments, English Garden Cities and new towns, American Greenbelt Towns, company towns, flight to the suburbs, Neo-traditional planning, the New Urbanism, and current sustainable development, Smart Growth, to the more recent Greening and Healthy Cities will be described and the actual city and regional planning practices are shown.
*Prerequisite:* ENGL101

**SOC270 Early American History**  (3 units)
This course is designed to lead the students to examine the early periods of American history that shaped the development of the nation, including America before Columbus, European expansion, the founding era and Revolution, the Constitution and the new republic, and subsequent periods of civic and political growth up to the Civil War.
*Prerequisite:* ENGL101

**SOC275 The American Experience**  (3 units)
This course is designed to lead the students to examine the 20th century rise of the United States as a modern multiethnic society with emphasis on the socioeconomic and political forces that have shaped its development.
*Prerequisite:* ENGL101
Master’s Degree Programs

The School of Engineering offers three master’s degree programs:

- Master of Science in Electrical Engineering (MSEE)
- Master of Science in Computer Systems Engineering (MSCSE)
- Master of Science in Computer Science (MSCS)

Objective

The objective of the master’s degree programs is to provide advanced engineering training to those who wish to practice their profession with increased competence in the high-technology electronics and computer industries. Each program emphasizes both mastery of subject matter and an understanding of related research and research methodology. This emphasis implies development of the student’s ability to integrate and apply the subject matter.

Committee Oversight

The responsibility for developing, modifying, and maintaining each master’s degree program is performed by the Academic Committee for this School. The Academic Committee is lead by a designated group of members who invite inputs from qualified students, faculty, administrators, employers, as well as the Advisory Committee members to conduct their duties.

Credential Requirements

The master’s degree program applicants must hold a valid bachelor’s degree and meet the minimum grade point average requirement for consideration of acceptance.

Application Requirements

To apply for admission into a master’s degree program, the applicant is required to submit the following to the NPU Admissions Office: (1) an online Application Form, (2) a nonrefundable application fee, (3) official transcripts from previously attended colleges; (4) a document certifying completion of a bachelor’s degree; a transcript printed with degree completion information will suffice (5) an English proficiency document is required for non-native English speakers: An official transcript with English course records or TOEFL/IELTS score report or equivalent will suffice. NPU’s English assessment exam, when available, can be taken by the applicant to meet this requirement. See English Proficiency Requirement below for detailed information on the English entrance requirement, and (6) Resumes are required for applicants interested in applying for scholarships.

- International Students: In addition to the above general application requirements, an international applicant is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

English Proficiency Requirement

Non-native English speakers are considered meeting the entrance English proficiency requirement if they meet any of the following requirements:

- Used English as the official language and completed study in a high school or college degree program,
- Has completed a college English credit course in an English speaking institution,
- Has submitted an official TOEFL or IELTS test score report to NPU and the score meets the entrance English requirement set by the NPU admissions office.

The TOEFL institution code for NPU is 9626.

Conditional acceptance may be granted to applicants whose TOEFL/IELTS scores or other equivalent records do not meet the above requirement but have reached intermediate level of the American Language classes (ESL) offered by NPU. These students will be required to
enroll in ESL classes until they pass the advanced level ESL classes before enrolling in degree courses.

**NPU’s English Placement Examination (EPE):** An applicant may be offered the option to take NPU’s English Placement Examination in place of the standardized tests. The exam result affects the applicant’s admission status. A fee will be charged for this service.

NPU may accept the English assessment reports from a few U.S. English language institutions recognized by major universities in the U.S.

- **General Background Requirements for Pursuing Master’s Degrees**

**Background Preparation:** The background preparation for each graduate program is described at the beginning of each program. Background deficiencies are identified in the admission evaluation report received by each applicant. The student is required to clear the deficiencies early in his/her study at NPU.

**How to Clear Deficiencies:** The graduate student may clear each background deficiency by taking and passing the subject course (an undergraduate course) at NPU. The student may earn graduate elective credit when taking mezzanine courses to clear deficiencies at NPU. With advance approval by the Admissions Committee, the student may be allowed to clear a deficiency by taking a proficiency exam on the subject.

Courses taken elsewhere after joining the degree program at NPU will not waive a deficiency requirement. **Students may not take the deficiency courses at another institution while attending NPU.**

- **Transfer of Credit from Other Institutions**

Graduate course credit earned at other accredited higher education institutions may be transferable to meet the student’s graduation requirements if the courses are closely related to the engineering course requirements in the student’s intended program of study and the grade earned meets the requirement stated below. Such course credits are considered qualified transfer credits. Credit transfer is made by the admission evaluators while conducting the admission evaluation.

The following statements apply to qualified transfer credits:

- The NPU Admissions Office must receive all **official transcripts** prior to the student’s joining a degree program. Without preapproval, transcripts received after the student joins NPU cannot be used in transferring credits, except for records from the term immediately preceding the student’s starting semester at NPU.
- The student was officially enrolled in the course.
- No more than 9 units of qualified graduate-level course credits may be transferred.
- Courses for transfer to NPU may not be completed concurrently at another institution while attending NPU.
- Credits are transferred by the following conversion:

  □ **Definition of a Trimester/Semester Unit:**
  One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

  □ **Conversion Factor:**
  
  $1$ quarter unit $= 0.66$ trimester/semester unit

  □ **Grades Required for Transfer Credit**

In the master’s degree programs, qualified courses completed with a grade of “B” or better are transferable. Courses completed with a “CREDIT” grade are transferable only if the institution’s grading policy states that “CREDIT” is granted with a letter grade which meets the above condition. This policy must be in writing from the institution (transcript key or letter of verification).

Courses completed with a “CREDIT” grade are transferable only if the institution’s grading policy states that “CREDIT” is granted with a letter grade which meets the above condition. This policy must be in writing from the institution (transcript key or letter of verification).

NPU undergraduate students who take graduate level courses for graduate credits at NPU while completing their undergraduate degrees are allowed a maximum of 12 units to be counted
towards a graduate degree. These courses may not count towards the undergraduate degree. These students may apply for admission to a master’s degree program at NPU in the last semester of their undergraduate study. They are required to complete their undergraduate study before being officially admitted into a graduate program.

**Proficiency Exams:** A student may be required to demonstrate proficiency in an undergraduate background subject taken more than ten years prior to application with NPU by successful completion of a proficiency examination.

A student may also select to take proficiency exams to clear his/her background deficiencies in order to satisfy the background preparation required by his/her program. Rules for taking proficiency exams must be observed by the student. Of particular importance is timing for taking each proficiency exam. Clearance of a background subject must be completed early enough to meet two conditions: (1) There must be sufficient time for administrative processing of the exam and (2) Processing of the exam must be completed prior to the student’s registration in any course with the deficiency subject as a prerequisite for the course.

- **Tuition**

  Tuition is charged per unit. Tuition for courses taken to fulfill the master’s degree requirement is $450.00 per unit.

- **Tuition per Unit for Courses Audited**

  For courses audited (without earning credit), the tuition is half the regular unit rate. Not all courses can be taken with “audit” status.

- **Estimated Semester Cost of Tuition for a Full-Time Student**

  The tuition is $4,050 for a master’s degree student taking 9 units per semester

- **Graduation Requirements**

  A minimum of 36 units of graduate-level coursework are required for each master’s degree program. Additional coursework may be required for a student whose undergraduate degree program was in a different field or who is required to clear his/her background deficiencies by taking these courses at NPU.

  The following are required for graduation:

  - A graduate student entered with undergraduate deficiencies must clear the deficiencies as soon as possible. The student may clear a subject by either taking the course and earning a passing grade or passing a proficiency exam on the subject,
  - Maintain a grade of C- or better for all courses taken towards the degree requirements,
  - Maintain an overall G.P.A. of 3.0 or better,
  - Maintain good standing with the University – with clear financial, library, and other school records,
  - The student is approved to graduate after filing a petition for graduation.

- **Capstone Course**

  The capstone course in each engineering master’s degree program is intended to integrate the knowledge and hands-on experience that the student has acquired from the coursework taken in the program. The capstone course instructor determines the course objectives and scope based on the degree curriculum and technology trend. With this learning experience, the student is prepared to pursue his/her career in the high-technology industry.

  The student shall take the capstone course near the end of his/her program of study.

- **Career Planning**

  The students are encouraged to gain real-world experience by engaging in curricular practicum when applicable. For career planning, the students may utilize the online eCareer Center and work with the Career Center staff to prepare their resumes and participate in job search activities when they are ready for such a pursuit.
The following are descriptions of the master’s engineering degree programs, each with a statement of objectives, a description of the background preparation for the program, and the program curriculum.

**Course Numbers**: Courses numbered in the 200s, 300s, and 400s are undergraduate background courses; courses numbered from 450G to 499G are mezzanine courses; courses numbered in the 500s and above are graduate level courses. Mezzanine and graduate level courses are to meet the graduation requirements.

- **Master of Science in Electrical Engineering (MSEE)**

**Objectives**: The MSEE degree program is designed to provide students with advanced knowledge and hands-on experience in electronics engineering. Through the learning process, the students not only acquire knowledge in modern electronics technologies but also cultivate abilities in designing, simulating, and integrating the engineering subjects learned. They are encouraged to apply their knowledge and skills to course projects that match industry trends.

**Background Preparation**

Students admitted into the MSEE degree program are required to have the following background preparation. A student with any deficiency is required to clear it by either (1) taking the course at NPU and earning a grade of at least C- or higher, or (2) taking and passing a proficiency exam on the subject. The student must clear prerequisites before attempting to enroll in graduate level courses.

1. **Engineering Mathematics**: MATH201, MATH202, MATH203, MATH205, and MATH208;
2. Engineering Sciences: PHYS201 & Lab, PHYS202 & Lab, PHYS301;
3. **Electrical and Computer Engineering Subjects**: CS204 & Lab, EE205 & Lab, EE300, EE301, EE323 & Lab;
4. The following mezzanine courses are also required for background preparation. Credit earned at NPU can meet the Electives requirement for the program: EE450L/G, EE461L/G, and P450G.

The above background preparation subjects will satisfy the prerequisites for the courses listed in the following Foundation Requirements as well as graduate courses in the study areas of VLSI engineering, wireless communication, and network engineering. Additional background preparation subjects required for graduate courses in other concentration areas are: CS380, and CE450/G and its lab course CE450L/G for embedded engineering area; CS360, CS360L, and CS480/G and its lab course CS480L/G for Cloud computing and mobile application technologies areas. Instructors may update the prerequisite requirements for a concentration area based on changing technologies.

**MSEE Curriculum**

A minimum of 36 semester units of graduate study are required for the MSEE program. They include a few required foundation courses, a number of engineering courses based on the student’s selection of technical pursuit, a required capstone course, and electives. The engineering coursework in the ranges of electronics and computer engineering will develop technical skills beneficial to the student for career planning. The student also has the opportunity to take elective courses outside of the electronics or computer engineering areas to broaden the student’s skillset.

The student must meet prerequisite requirements when taking any course. Upon clearing background preparation work, the student starts to take courses to meet the degree requirements. The student must begin his/her graduate study with the subjects listed in the Foundation Requirements section.
Foundation Requirements (9 units)
(Required subjects)

EE450G Systems Analysis and Simulations
EE461G Digital Design and HDL
EE468G Microelectronics Circuit Design and Analysis

Engineering Course Requirements (12 units)

The student is advised to consider industry trends when selecting electronics and computer engineering courses. Before taking the Capstone Course near the end of the program, the student will take a minimum of 12 units of graduate level engineering courses and 12 units of electives. Choices of field of study include the following: VLSI engineering, embedded engineering, wireless communication, Internet technology, mobile computing, and network engineering.

As an example, the following courses belong to the study area of VLSI engineering. The student develops desirable skills in the VLSI engineering profession by taking these courses:

EE505 Advanced Digital IC Design
EE509 Mobile and Wireless Communication
EE511 Advanced Analog IC Design
EE520 Advanced FPGA Design and Implementations

Each semester when the course offering list is published, instructions on graduate level courses belonging to various concentration areas are also published along with the course offering list. Every graduate student is advised to refer to these instructions to select courses and build his/her expertise area. In addition, a cross disciplinary study of engineering concentration areas can be desirable as the fast changing electronics and computer industries have become more demanding on engineers to have multidisciplinary skillsets.

Electives (12 units)

The student may take any graduate-level courses, even outside of engineering, to meet the electives requirement of 12 units. When applicable, the student may take Curricular Practicum courses and engage in practical training to work on company projects that are directly related to the student’s field of study. No more than 6 units of practicum coursework may be counted towards degree requirements.

Capstone Course (3 units)
(A required subject)

Upon completing all or most of the coursework for this program, the student is required to take the capstone course and, under the guidance of the course instructor, integrate the knowledge and skills learned from all of the courses taken during the program.

EE595 Electrical Engineering Capstone Course
Objectives: The MSCSE degree program is designed to provide students with advanced knowledge and hands-on experience in computer systems engineering relating to embedded systems, ubiquitous computing, or other traditional computer engineering fields, such as network engineering, Internet technology, etc. Through the learning process, the students acquire not only knowledge in modern computer systems technologies but also the ability to design and develop real-time computer systems in modern networking and digital Internet environments. Students are encouraged to apply their knowledge and skills to course projects that match the industry trends.

Background Preparation

Students admitted into the MSCSE degree program are required to have the following background preparation. A student with any deficiency is required to clear it by either (1) taking the course at NPU and earning a grade of at least C- or higher, or (2) taking and passing a proficiency exam on the subject. The student must clear prerequisites before attempting to enroll in graduate level courses.

1. Computer Engineering Subjects: CS350 & Lab, CS360 & Lab, CS385 & Lab;
2. The following mezzanine courses are also required for background preparation. Credit earned at NPU can meet the Electives requirement for the program: CE450LG, CS480LG, P450G.

The above background preparation subjects will satisfy the prerequisites for the courses listed in the following Foundation Requirements as well as graduate courses in the study areas of embedded engineering, Internet technology, network engineering, and mobile computing. To take graduate level database courses, student needs to satisfy the following additional prerequisites: CS457/G and its lab course, CS457L/G. Instructors may update the prerequisite requirements for a concentration area based on changing technologies.

MSCSE Curriculum

A minimum of 36 semester units of graduate study are required for the MSCSE program. They include a few required foundation courses, a number of engineering courses based on the student’s selection of technical pursuit, and a required capstone course, and electives. The computer engineering coursework will develop technical skills beneficial to the student for career planning. The student also has the opportunity to take elective courses outside of computer engineering to broaden the student’s skillset.

The student must meet prerequisite requirements when taking any course. Upon clearing background preparation work, the student starts to take courses to meet the degree requirements. The student must begin his/her graduate study with the subjects listed in the Foundation Requirements section.

Foundation Requirements (9 units)
(Required subjects)

- CE450G Fundamentals of Embedded Engineering
- CS464G Software Design and Implementations
- CS480G Java and Internet Applications

Engineering Course Requirements (12 units)

The student is advised to consider industry trends when selecting computer engineering courses to meet the requirements specified in this section. Before taking the Capstone Course near the end of the program, the student will take a minimum of 12 units of graduate level engineering courses and 12 units of electives. Choices of field of study include the following: embedded engineering, Internet technology, mobile computing, network engineering, and database technology.
As an example, the following courses belong to the study area of embedded engineering. Selecting any four (4) courses from the list will not only meet the Engineering Course Requirements but also help the student develop desirable skills in the embedded engineering profession:

- CS501 Advanced Structured Programming and Algorithms
- CE521 Real-time Systems and Programming
- CE522 Embedded Design in Networking Environment
- CE523 Embedded Design in Device Driver Environment
- CE530 Embedded Software Design in Linux
- CS551 Mobile Computing for Android Mobile Devices

Each semester when the course offering list is published, instructions on graduate level courses belonging to various concentration areas are also published along with the course offering list. Every graduate student is advised to refer to these instructions to select courses and build his/her expertise area. In addition, a cross disciplinary study of engineering concentration areas can be desirable as the fast changing computer industry has become more demanding on engineers to have multidisciplinary skillsets.

**Electives (12 units)**

The student may take any graduate-level courses, including those outside of engineering, to meet the electives requirement of 12 units. When applicable, the student may take Curricular Practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. No more than 6 units of practicum coursework may be counted towards graduation.

**Capstone Course (3 units)**

(A required subject)

Upon completing all or most coursework for this program, the student is required to take the capstone course and, under the guidance of the course instructor, integrate the knowledge and skills learned from all of the courses taken during the program.

- CE595 Computer Systems Engineering Capstone Course
- **Master of Science in Computer Science (MSCS)**

**Objectives:** The MSCS degree program is designed to provide advanced knowledge and hands-on experience in computer science to students who are interested in gaining expertise in software engineering as well as modern Internet technologies and applications. Through the learning process, the students not only acquire knowledge in modern computer technologies but also cultivate abilities in software design, development, deployment, and integration aspects of professional learning. They are encouraged to apply their knowledge and skills to course projects that match industry trends.

**Background Preparation**

Students admitted into the MSCS degree program are required to have the following background preparation. A student with any deficiency is required to clear it by either (1) taking the course at NPU and earning a grade of at least C- or higher, or (2) taking and passing a proficiency exam on the subject. The student must clear prerequisites before attempting to enroll in graduate level courses.

1. **Computer Science Subjects:** CS350 & Lab, CS360 & Lab, CS385 & Lab;
2. The following mezzanine courses are also required for background preparation. Credit earned at NPU can meet the Electives requirement for the program: CS457LG, CS480LG, and P450G.

The above background preparation subjects will satisfy the prerequisites for the courses listed in the following Foundation Requirements as well as graduate courses in the study areas of cloud computing and big data, mobile application technologies, QA engineering, and network engineering.

### MSCS Curriculum

A minimum of 36 semester units of graduate study are required for the MSCS program. They include a few required foundation courses, a number of software engineering courses based on the student’s selection of technical pursuit, a required capstone course, and electives. The software engineering coursework is to develop technical skills beneficial to the student for career planning. The student also has the opportunity to take elective courses outside of computer science to broaden the student’s skillset.

The student must meet prerequisite requirements when taking any course. Upon clearing background preparation work, the student starts to take courses to meet the degree requirements. The student must begin his/her graduate study with the subjects listed in the Foundation Requirements section.

**Foundation Requirements** (9 units)
(Required subjects)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS457G</td>
<td>Data Modeling and Implementation Techniques</td>
</tr>
<tr>
<td>CS480G</td>
<td>Java and Internet Applications</td>
</tr>
<tr>
<td>CS501</td>
<td>Advanced Structured Programming and Algorithms</td>
</tr>
</tbody>
</table>

**Software Engineering Course Requirements** (12 units)

The student is advised to consider industry trends when selecting computer science courses. Before taking the Capstone Course near the end of the program, the student will have taken a minimum of 12 units of graduate level software engineering courses and 12 units of electives. Choices of field of study include the following: cloud computing and big data, mobile application technologies, QA engineering, and network engineering.
The following are examples of cluster courses for each concentration area:

- **Cloud Computing and Big Data**: CS536, CS550, CS570, CS571
- **Mobile Application Technologies**: CS548, CS551, CS556, CS557, CS558
- **QA Engineering**: CS521, CS522, CS548, CS575
- **Network Engineering**: CS515, CS535, CS565, CS575

Selecting any four (4) courses from the above lists will meet the Software Engineering Course Requirements. Taking four (4) courses in a cluster area will also help the student develop desirable skills in that specialized software engineering profession.

Each semester when the course offering list is published, instructions on graduate level courses belonging to various concentration areas are also published along with the course offering list. Every graduate student is advised to refer to these instructions to select courses and build his/her expertise area. In addition, a cross disciplinary study of concentration areas can be desirable as the fast changing computer industry has become more demanding on engineers to have multidisciplinary skillsets.

**Electives (12 units)**

The student may take any graduate-level courses, including those outside of software engineering, to meet the electives requirement of 12 units. When applicable, the student may take Curricular Practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. No more than 6 units of practicum coursework may be counted towards graduation.

**Capstone Course (3 units)**

(A required subject)

Upon completing all or most coursework for this program, the student is required to take the capstone course and, under the guidance of the course instructor, integrate the knowledge and skills learned from all of the courses taken during the program.

CS595 Computer Science Capstone Course
Course Descriptions
Master’s Degree Programs, School of Engineering

Master’s degree courses are numbered in the 500s. Each master’s degree program allows for a limited number of credits for 400 level courses with a “G” suffix.

Course No. Description
450G-490G Mezzanine courses for graduates
500-699 Graduate level courses

For information on prerequisite subjects numbered below 450, refer to the section on Course Descriptions for the Undergraduate Degree Programs, School of Engineering.

Courses are listed by subject: Biological Science and Bioengineering, Computer Engineering, Computer Science, Curricular Practicum, Electrical Engineering, Engineering, Professional Development.

Each course description is followed by its prerequisite information expressed in course numbers.

Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

Bioengineering

BE450G Introduction to Bioengineering (3 units)
This course presents an overview of the bioengineering and biotech fields. It is intended to build a solid foundation for students who are interested in exploring emerging bioengineering fields such as bioinformatics and biometrics. Topics include fundamentals of biology, cell biology, genes and proteins, molecular genetics, the impact of modern biology on science and medicine, biosensors, biochips, bioinstrumentation, computer-aided diagnosis and biometrics.
Prerequisite: MATH208

BE505 Fundamentals of Bioinformatics (3 units)
This course introduces the fundamental concepts of how present-day bioinformatics applications are employed to enhance the understanding of biological information encoded in genetic or macromolecular sequences. The emphasis on using easily accessible text to illustrate how computational methods work is invaluable to those who have only basic computational backgrounds. All key topics are covered, including biological databases, sequence alignment, gene prediction, molecular phylogenetics, structural bioinformatics, genomics, and proteomics. To gain hands-on experience, projects using current bioinformatics tools are provided.
Prerequisite: BE450

BE510 Biometrics and Computer-Aided Detection (CAD) Technology (3 units)
The course introduces the concepts and principles of biometrics and CAD. Topics include neural networks, fuzzy logic, genetic algorithms, fingerprint, face recognition, voice recognition, computer-aided diagnosis, and their applications and implementation.
Prerequisite: BE450

BE515 Bioinformatics Methodologies (3 units)
This course provides insights into how computer science procedures and techniques are solving bioinformatics problems. Internal workings of modern bioinformatics applications are discussed in the context of analytical models, computational methodologies, and graph theories. Simple modeling concepts are used to explain how popular bioinformatics tools and databases are developed to extract biological information from DNA, RNA, and protein sequences. To gain better understanding of such technical information, students are also encouraged to work on bioinformatics projects.
Prerequisite: BE450

BE550 Advanced Topics on Bioengineering (3 units)
Advanced topics on bioengineering will be given by faculty members or invited guest speakers to expose the students to emerging bioengineering technology.
Prerequisite: BE450
Computer Systems Engineering

CE522 Embedded Design in Networking Environment (3 units)
This course is designed for the students to learn protocol stack implementation/porting in a real-time operating system (RTOS) kernel environment. Students learn the concept of network protocol stack implementation/porting, embedded real-time system software architecture, and real-time operating systems. They also learn to design and write programs as a collection of independent and concurrent tasks, non-preemptive and preemptive multi-tasking, task scheduling, and task synchronization and intertask communication including semaphores and message queues.

Prerequisite: CE450

CE527 Embedded Systems in Windows CE Environment (3 units)
This course prepares students to enter the challenging world of embedded Linux. It covers the following key topics: comparing Linux and traditional embedded environments, comparing leading embedded Linux processors, understanding the details of the Linux kernel initialization process, learning the basic concepts about Linux drivers, learning about the special role of bootloaders in embedded Linux systems - with specific emphasis on U-Boot, using embedded Linux file systems, understanding the Memory Technology Devices subsystem for flash (and other) memory devices, mastering debugging tools such as gdb, KGDB, learning many tips and techniques for debugging within the Linux kernel, learning how to maximize productivity in cross-development environments, learning to prepare an entire development environment, including TFTP, DHCP, and NFS

Prerequisites: CE450
target servers; and learning to configure, build, and initialize BusyBox to support a set of unique requirements. Hands-on exercises are required.

**Prerequisite:** CE450

**CE589 Special Topics (3 units)**
Special topics courses are offered to graduate students in Computer Systems Engineering programs by current faculty members or invited guest speakers to expose the students to emerging technologies related to their studies. These courses are conducted the same way as regular courses.

**Prerequisite:** CE450

**CE595 Computer Systems Engineering Capstone Course (3 units)**
The capstone course is intended to integrate the knowledge and hands-on experience that the student has acquired from the foundation, core, and elective coursework required for the program in the course under the guidance of the course instructor. The instructor determines the course objectives and scope based on the computer engineering curriculum and technology trend. The instructor guides the students to develop their integration ability. The student shall take the capstone course near the end of his/her program of study.

**Prerequisite:** Must be in the final semester of the program.

**Computer Science**

**CS453G Compiler Design (3 units)**
This course is designed to give students a fundamental knowledge of compilers and interpreters for modern computer languages. Topics include a study of modern computer languages, regular expressions, lexical analysis, parsing techniques, context-free grammars, and syntax-directed translation. Hands-on exercises and trimester projects are required.

**Prerequisite:** CS350

**CS457G Data Modeling and Implementation Techniques (3 units)**
This is the first of a series designed to teach relational database concepts, design, and applications. Topics include database architecture, relational model, structured query language (SQL), data manipulation language (DML), data definition language (DDL), database design, ER modeling, database normalization, denormalization, and physical database design. Popular database systems, such as Oracle and Microsoft SQL server, are used for hands-on exercises and projects.

**Prerequisite:** CS360

**CS457LG Database Technologies Lab (1 unit)**
This is a drill course designed to be taken with the course CS457 Data Modeling and Implementation Techniques. The students gain hands-on experience in database applications using popular database systems including Oracle database and Microsoft SQL server. They are also guided to work on database design projects.

**Prerequisite:** CS360L

**CS464G Software Design and Implementations (3 units)**
This course is designed to use C/C++ to achieve the goal of teaching the students the design methodology for algorithm development. The objective is to develop the students’ programming ability with proper logical and object-oriented thinking processes. The course covers two main topics: (1) Problem specification and analysis - understand the problem, analyze it, and translate the human thinking into a computer program; (2) Object-oriented design and analysis - understand data abstraction, encapsulation, aggregation, and inheritance. These concepts are the foundation for modern object-oriented programming languages such as C, C#, and Java. Hands-on practices are required.

**Prerequisite:** CS360

**CS470G Network Engineering and Management (3 units)**
This course is designed to introduce network communications. Topics include network layered models (OSI, TCP/IP), architecture, principles, service models and protocols; data communication basics, switching, routing, security, network management, and wireless and mobile networks. Modern Internet technologies and implementations are presented in case studies. Hands-on exercises are required.

**Prerequisite:** CS360

**CS470LG Network Engineering Lab (1 unit)**
This is a drill course designed to be taken with the course CS470 Network Engineering and Management. The students learn network communications through weekly hands-on drill sessions. They learn protocols used in network data communication, routing design, and network management. The students will gain the experience of using popular routers and switches in their exercises.

**Prerequisite:** CS360L

**CS480G Java and Internet Applications (3 units)**
This course introduces students to the Java language, programming with object-oriented construct, GUI design and graphics programming, and core Java libraries. Students will learn Java language basics such as syntax and classes, inheritance, interfaces, reflection, graphics programming, event handling, user-interface components with Swing, Java applets, exception handling, stream, and files. Hands-on exercises are required.

**Prerequisite:** CS360
CS480LG Java Programming Lab  (1 unit)
This is a drill course designed to be taken with the course CS480 Java and Internet Applications. The students gain Java programming skills through hands-on exercises in this weekly lab course. Weekly hands-on exercises normally correspond with the lecture material offered in each week.
Prerequisite: CS360L

CS501 Advanced Structured Programming and Algorithms  (3 units)
This course provides an in-depth analysis and efficient use of algorithms to solve problems. Well-structured programs are studied; modular, top-down design is emphasized. Topics include the use of data structures techniques to design efficient algorithms and analyze their complexity, efficient implementation of combinatorial algorithms, sorting, searching, and geometric problems, and branch and bound algorithms. Hands-on exercises are required.
Prerequisite: CS480

CS510 Advanced UNIX/Linux Programming  (3 units)
This course is designed for students to gain fundamental knowledge of and hands-on experience with programming in the UNIX/Linux environment. Students will learn to program in C with UNIX/Linux system calls and other advanced topics such as the UNIX file system, process control, signals and inter-process communications. Students are required to do a term project with a substantial amount of programming. Upon completion of this course, students should be able to develop real-world UNIX/Linux applications. Hands-on practice and projects are required.
Prerequisite: CS470

CS515 UNIX/Linux Network Programming  (3 units)
This course is designed for graduate students to gain hands-on experience in UNIX/Linux network programming. The students will learn to develop UNIX/Linux network applications using a number of UNIX/Linux network programming interface techniques including Sockets, XTI, and RPC. Topics include: an overview of transport layer (TCP/UDP), TCP sockets, UDP sockets, threads and client-server design, XTI, RPC, and Streams. Hands-on exercises and projects are required.
Prerequisite: CS470

CS521 Software Project Management  (3 units)
This course teaches students to apply current software development approaches to managing modern complex software projects. Practical strategies, tactics, and designs are discussed together with realistic exercises. Topics include software development process, project planning, requirements definition, design specification, usability engineering, verification and validation, project and change management, and process quality improvement. Students are required to participate in all course activities to develop a real-world software product.
Prerequisite: CS380

CS522 Software Quality Assurance and Test Automation  (3 units)
This course teaches students to learn practical static and dynamic techniques that allow software development teams to engineer high quality products. The course begins with an overview of modern software development approaches. It then introduces quality management and test development based on preventive and agile principles as well as quality risk analysis. It covers system, unit, integration, performance, and automated testing techniques. Quality improvement models for software development and testing are discussed. Several test automation tools are demonstrated in class. Students gain hands-on experience through homework assignments and exercises and learn to test real-world applications.
Prerequisite: CS480

CS526 Advanced Web Programming  (3 units)
This course teaches students to learn how to build modern web applications with web application frameworks. It helps students understand how the web application framework performs, and shows students how to use various features of the framework to solve many problems in real-world development scenarios they’re likely to face. In the process, students will learn how to work with HTML, CSS, JavaScript, the Object-relational Mapping Framework, and other web technologies. Students will start by learning core concepts such as the Model-View-Controller architectural pattern, and then work their way toward advanced topics as well as mobile web development techniques.
Prerequisite: CS390

CS527 Advanced .NET Windows Programming  (3 units)
The goal of this course is to provide students with the knowledge and skills needed to develop C# applications and components for the Microsoft .NET Platform. Topics cover using system types, collections, and generics to help manage data; developing services, application domains, and multithreaded applications; creating a UI for a Windows forms application by using standard controls; using ADO.NET and XML; implementing printing and reporting functionality; enhancing usability; implementing asynchronous programming techniques to improve the user experience; developing Windows forms controls; and configuring and deploying applications. Hands-on practice is required.
Prerequisite: CS480
CS532 Advanced Internet Programming and Design (3 units)
This course is designed to give the students an in-depth understanding of Java programming techniques. The course focuses on advanced Java language features and packages which are essential for building a variety of application architectures. Topics include Java techniques of XML, JNI, thread, network programming, generic programming concepts of JDK-1.5 and beyond, and internalization. Upon completion of this course, the students should be well prepared to create enterprise-wide, Java-centric solutions to client/server problems involving Java and networks. Each technology topic will cover its uses, implementation, and language issues. Students are required to implement a project for each Java technique. Hands-on exercises are required.
Prerequisite: CS480

CS535 Network Security Fundamentals (3 units)
This course addresses the security issues on the internet and the web. Major topics include issues related to internet infrastructure and applications running on the internet, techniques to reduce security risks, and an introduction to the role of security as an enabling technology for electronic commerce. The course includes an overview of internet and web security, its applications and legal issues, encryption and cryptography, SSL and internet and web security, its applications and legal issues. This course includes an overview of internet and web security, its applications and legal issues, encryption and cryptography, SSL and internet and web security, its applications and legal issues. Hands-on exercises are required. 

CS536 Modern Internet Technology Design and Applications (3 units)
This course introduces Java 2 platform Enterprise Edition (J2EE/JEE) of which the Enterprise JavaBean (EJB) component architecture is a vital piece. With J2EE/JEE, one can rapidly construct distributed, scalable, reliable, and portable secure server-side, client/server, threaded network programming deployments. Although J2EE/JEE is a conglomeration of concepts, programming standards, and innovations, this course will focus on EJB, JNDI, transaction and security aspects of J2EE/JEE with real-world programming examples. Hands-on practice and projects are required.
Prerequisite: CS480

CS540 Advanced Database Administration (3 units)
This course provides an in-depth understanding of the Oracle Database Management System. Emphasis is on the latest Oracle database architecture, database configuration and administration. Topics include logical/physical database layout, database server processes, database creation, various database physical objects; client/server configuration, multi-threaded server configuration, database storage management, database security, database utilities, database monitoring, partitions, and database backup/recovery methods. Hands-on practice is required.
Prerequisite: CS457

CS547 Advanced Database Design and Analysis (3 units)
This course is intended for graduate students to further explore database server development and database tuning. The course specifically details procedural extensions to SQL to develop stored procedures, functions, packages and database triggers. In addition, it covers database performance tuning from an application development point of view by exploring query optimizer, database hints, and various database access methods. Hands-on exercises are required.
Prerequisite: CS457

CS548 Web Services Techniques and REST Technologies (3 units)
This course covers the fundamental concepts of the 3-tier model commonly used in Enterprise Application development. Topics include the Spring Framework, JDBC with database applications, JPA (Java Persistence API), Hibernate, Spring MVC, Java Servlets, and JavaBeans. In addition, the students will learn the best practice development approach using the Sprint Framework with JDBC or ORM (Object Relational Mapping) tools to map business domain object models to the underlying relational database. At the end of this course, the students shall have a fresh view on both the fundamental and advanced skills to implement large scale enterprise systems. Hands-on exercises are an integral part of the course.
Prerequisite: CS480

CS550 Data Mining and Business Intelligence (3 units)
This course introduces methods and techniques for using stored business data to make business decisions. The student will learn data types including operational or transactional data such as data for sales, cost, and inventory; nonoperational data such as forecast data and macroeconomic data; and meta data, and learn their patterns, associations, or relationships, and how to use these information for decision making. Modern datawarehouse concepts will also be introduced. Specific examples of businesses using data mining techniques will be given in the course. The student is required to work on course projects by using modern data analysis software and referring to cases studied.
Prerequisite: CS457

CS551 Mobile Computing for Android Mobile Devices (3 units)
Google's Android mobile phone software platform may be the next major opportunity for application software developers. Android has the potential for removing the barriers to successful development and sales of a new generation of mobile phone
application software. Just like PCs which have created markets for desktop and server software, Android will create a new market for mobile applications by providing a standard mobile phone application environment. This hands-on course focuses on developing applications for Android, including map-based applications, camera-based applications, SMS, etc. Advanced development topics are also covered, including security, IPC, and certain advanced graphics and user interface techniques.

Prerequisite: CS480

CS555 Developing Applications for Windows Mobile Environment (3 units)
This course focuses on the unique challenges, methods, tools, and technologies for using Windows Mobile to develop software applications for wireless and mobile devices, such as personal digital assistants (PDA) and smart mobile phones. Topics include user interface design for small-screen, multi-channel devices, programming techniques and memory management for devices with limited memory and processing power, data synchronization for mobile databases, and wireless network programming.

Prerequisite: CS470

CS556 Mobile Applications on iPhone Platform (3 units)
This course provides an in-depth study of the design, development and publication of object-oriented applications for the iPhone and iPod Touch platforms using the Apple SDK. Students will learn to utilize Objective-C and the various SDK frameworks to build iPhone & iPod touch applications under Mac OS X.

Prerequisite: CS360

CS557 Web Front-end Programming for Mobile Devices (3 units)
This course focuses on cross-platform software development techniques. Topics include Javascript, HTML5, Cascading Style Sheets(CSS3), jQuery Mobile, AJAX, mobile platforms, mobile website development, and mobile applications development using PhoneGap, etc. Hands-on practices are required.

Prerequisite: CS360

CS558 Mobile Apps Development (3 units)
This course provides the students an in-depth study of the tools and knowledge necessary to develop applications for mobile platforms, specifically for Apple iOS and Google Android devices. Differences between mobile and desktop computing will be examined; sample mobile apps will be dissected; tool suites for the development of new mobile apps will be covered, including programming languages such as Objective-C and Java, frameworks such as Cocoa/iOS and Android Application Framework, and libraries and integrated development environments such as Xcode for iOS and Android Studio for Android. Hands-on exercises are required.

Prerequisite: CS480

CS565 Advanced Network Management (3 units)
This course is designed to give graduate students an in-depth understanding of and a hands-on experience in the management of network systems and applications. Emphases are on simple network management protocol (SNMP) management, MIB, management tools, system and applications. Current widely-used applications by industry will be used to demonstrate the management concepts. Computer-based training software will be used to check/verify the students’ network management skills in order to ensure they are prepared for the industry challenges. Topics include Network Management fundamentals; OSI/MAN, SNMP and TMN standards; RMON and ITU TMN architecture; inside structure and practical applications of SNMP, SNMP2, SNMP3, RMON, RMON2, and MIBs. Hands-on exercises are required.

Prerequisite: CS470

CS570 Big Data Processing – MapReduce Programming (3 units)
This course introduces the Hadoop framework in depth, teaching the MapReduce concurrent programming paradigm. Students will learn how to use different MapReduce patterns using Hadoop, and apply these techniques to big data analytic problems, such as PageRank patterns using Hadoop, and apply these techniques to big data analytic problems, such as PageRank, maching, and social network graph mining. Hands-on programming skills on Apache Hadoop are emphasized in this course.

Prerequisite: CS480

CS571 Cloud Management – Hadoop Administration (3 units)
This course provides a practical approach to developing Java applications on top of the Hadoop platform. It presents the material as small building blocks with a coverage of each component in the Hadoop stack. Students will learn Hadoop's architecture and its underlying parts with top-down identification of component interactions within the Hadoop ecosystem. The course then provides in-depth coverage of the Hadoop Distributed Filesystem (HDFS), HBase, MapReduce, Oozie, Pig, Hive, and several other tools. To reinforce concepts, each section is followed by a set of hands-on exercises.

Prerequisite: CS480

CS575 Network Analysis and Testing (3 units)
This course covers computer network analysis, testing techniques, and experience-based strategies to isolate and solve network problems. Topics include wiring and cable testing issues, transmission encoding techniques, dissecting the IEEE 48-bit
MAC address, the impact of different types of broadcast traffic, operational details and analysis considerations for switches, Ethernet and Token Ring operational details and analysis, the IEEE 802.2 LLC protocol, datagrams and routing, IP specifics, protocol analysis and troubleshooting, baselining throughput and latency. Hands-on exercises using protocol analyzer are required to reinforce the topics.

Prerequisite: CS470

CS559 Special Topics (3 units)
Special topics courses are offered to graduate students in the Computer Science program by current faculty members or invited guest speakers to expose the students to emerging technologies related to their studies. These courses are conducted the same way as regular courses.

Prerequisite: Depending on topic

CS595 Computer Science Capstone Course (3 units)
The capstone course is intended to integrate the knowledge and hands-on experience that the student has acquired from the foundation, core, and elective coursework required for the program in the course under the guidance of the course instructor. The instructor determines the course objectives and scope based on the computer science curriculum and technology trend. The instructor guides the students to develop their integration ability. The student shall take the capstone course near the end of his/her program of study.

Prerequisite: Must be in the final semester of the program.

Curricular Practicum

CPT501 Curricular Practicum (1 unit)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and instructions concerning this course are provided in the online application form. This is a full-time practicum course taken by the graduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.

Prerequisite: Refer to the instructions on the application and agreement documents.

CPT502 Curricular Practicum (2 units)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and instructions concerning this course are provided in the online application form. This is a full-time practicum course taken by the graduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.

Prerequisite: Refer to the instructions on the application and agreement documents.

Electrical Engineering

EE450G Systems Analysis and Simulations (3 units)
This course is an introduction to the basic concepts and principles of signals and systems. Both analog and digital signal processing techniques will be covered. Topics include analog signals and systems, digital signals and systems, LTI systems, Fourier transform, Z-transform, FFT, system stability, digital filter design, and network. Matlab software will be used to implement some of the DSP algorithms.

Prerequisite: MATH205

EE450LG Signal Analysis and Simulations Lab (1 unit)
This is a drill course designed to be taken with the course EE450 Systems Analysis and Simulations. The students gain hands-on experience with MATLAB and learn to use the tool to solve signals and systems problems. They also learn ADC and DAC design concepts as well as to use structured
programming to work on a development board project.

Prerequisites: MATH205

EE461G Digital Design and HDL (3 units)
This course develops the students’ ability to design commonly used basic building blocks of modern digital systems and provides them with a fundamental knowledge of the state-of-the-art design methodology, design considerations, and verification strategies for complicated digital hardware design. Topics include Verilog HDL basics, Logic modeling, state machine design and memory modeling using Verilog HDL. Additional topics on FPGA architectures, device vendors, FPGA design tools, FPGA applications and latest trend in the programmable logic industry are also covered. Students can use Verilog tools such as Synopsys VCS, Mentor Modelsim, Cadence NC Verilog, and Silo III Verilog Simulator from SimuCAD for their homework and design projects. Hands-on practice is required. Students are encouraged to take the HDL based sequence of courses EE461 and EE512 to gain knowledge and experience in semi-custom IC design using industry grade EDA design tools.

Prerequisite: EE323

EE461LG Verilog HDL Lab (1 unit)
This is a drill course designed to be taken with the course EE461 Digital Design and HDL. The students gain hands-on experience with Verilog simulation tools to learn logic design. They will have the chance to work on several design projects. They will also learn the essentials of several popular scripting languages: Perl, Python, Unix/Linux Shell.

Prerequisites: EE323 and EE323L

EE467G Introduction to Nanoengineering (3 units)
Recent development of the VLSI industry has significantly reduced its minimum feature size - to several tens of nanometers. This development necessitates carrying out engineering at the nanoscale, which demands an understanding of how electrons behave in nano-materials. A primary consideration is the electron's quantum behavior. Revolutionary discoveries of natural scientific phenomena, which had lead to the development of man-made devices and instruments of technology in the 20th century, is reviewed in this course. The special spin properties of the electron, and of the photon, are discussed to prepare the students for a further discussion on the topic. The recent emergence of spintronics, photonics, and quantum computing, as innovative technologies for the 21st century, are discussed. Field trips to leading high-tech companies and research laboratories in the Silicon Valley will be arranged for class members.

Prerequisites: MATH205

EE468G Microelectronics Circuit Design and Analysis (3 units)
This course provides an in-depth understanding of electronic circuit design and analysis at the transistor level. It is in preparation for studying more advanced analog or digital courses. The topics include differential and multistage amplifiers, current source and bias circuits, amplifier frequency response and feedback, output stages, operational amplifier, inverter, combinational logic, and sequential logic. The lab is run in conjunction with the course material and industry standard CAD tools are applied.

Prerequisite: EE301

EE488G Computer Architecture (3 units)
This course introduces the organization, design, and applications of modern computer architectures from both hardware and software perspectives. Topics include performance benchmark, instruction set (for both RISC and CISC), computer arithmetic, memory, parallelism (instruction, data, and thread levels), I/O and storage, multicore processors and programming and GPU (Graphics Processing Unit). Hands-on labs involving HDL and SPIM simulations, assemblers, linkers, and multithread programming are required to enhance classroom learning.

Prerequisites: EE461 and CS204

EE505 Advanced Digital IC Design (3 units)
EE505 is an advanced course in digital circuit design that applies the knowledge of advanced circuit design concepts to Digital IC in state-of-the-art CMOS technologies. It emphasizes the design and optimization of circuit/layout for combinational logic gates, sequential logic circuits, arithmetic building blocks, and memory circuits. The challenges of today's digital integrated circuit design, such as scaling, process variation, signal integrity, timing issues, interconnectivity, and power consumption will be addressed specially. The circuit simulation tool (HSPICE), layout design tool (Virtuoso), and schematic entry tool (Composer) are used for homework assignments and projects.

Prerequisite: EE468

EE508 VLSI Design - Place and Route (3 units)
This course is the third in the VLDI Design series and introduces ASIC place and route. The course introduces the students to state-of-the-art physical design automation tools and techniques. Topics include design flow, library review, tool graphical interface, floor planning, power planning, timing driven placement, static time analysis (STA), CT-Gen, special routing, final routing, engineering change order (ECO), and run batch mode jobs. Hands-on exercises and projects are required.

Prerequisite: EE461
EE509 Mobile and Wireless Communication (3 units)
This course covers the concepts of frequency re-use, wireless communication channel characteristics, modulation and demodulation for wireless communications, equalization and channel coding, speech coding, multiple access techniques such as FDMA, TDMA, CDMA, FDD and TDD, and commercial wireless communication standards such as AMPS, GSM, IS136 (TDMA), IS-95 (CDMA). Hands-on simulations are used to help students gain an in-depth understanding of wireless communication. Familiarity with communication theory and simulation tools such as MATLAB or system view is required.
(Note: This is an introductory course on wireless technologies. Any topic, such as GSM, TDMA, or CDMA can be expanded to a full-trimester course under Special Topics offerings.)
Prerequisite: EE450

EE511 Advanced Analog IC Design (3 units)
This course offers students extensive exposure to concepts and techniques in analysis and design of analog IC, including device modeling, basic circuit building blocks, feedback system, frequency response and noise. EDA tools may be used in homework assignments and projects.
Prerequisite: EE468

EE512 Application Specific Integrated Circuit Design (ASIC) (3 units)
In connection with EE461, this course is designed for students who intend to become logic designers using HDL based design methodologies. Topics include ASIC/CPLD/FPGA 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, Synopsys Synopsys DesignTime (under dc_shell), Synopsys Prime Time, Cadence Silicon Ensemble, Mentor Calibre LVS/DRC, and Synplicity Synplify are used for homework assignments and projects.
Prerequisite: EE461

EE520 Advanced FPGA Design and Implementations (3 units)
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. The course will cover two major Xilinx FPGA architectures in detail. The student will learn to build various digital blocks such as combinational logic, sequential logic, finite state machines, RAM and DSP by studying the architectures of the FPGAs. Hands-on exercises are required.
Prerequisite: EE461

EE553 System on Chip (SoC) Design (3 units)
System on Chip (SoC) is composed of many functional modules such as processor, memory, digital IPs, analog/mixed signal modules, RF and interfaces on a single chip. This course will focus on ARM based on-chip bus platform, digital IP verification, and the trend and integration of SoC.
Prerequisite: EE488

EE584 Quantum Concepts and Applications in Nanoengineering (3 units)
At the frontier of technology, the feature size in VLSI chips has reached below 20 nanometers. This kind of development necessitates carrying out engineering at the nanoscale, which demands an understanding of how electrons behave in nano-materials. To this end, key quantum concepts and their application in nanoeengineering will be discussed. Topics include: quantum tunneling, the spin behavior of the electron and of the photon, Magnetic Resonance Imaging, and quantum computation. A student hands-on project is required. Field-trip visits to leading high-tech companies and research laboratories in the Silicon Valley will be arranged. Students will have the opportunity to gain real-world experience: participate in project work applying new nano-engineering technologies in a workplace environment.
Prerequisite: EE467

EE589 Special Topics (3 units)
Special topics courses are offered to graduate students in the electrical engineering program by current faculty members or invited guest speakers to expose the students to emerging technologies related to their studies. These courses are conducted the same way as regular courses.
Prerequisite: Depending on topic

EE595 Electrical Engineering Capstone Course (3 units)
The capstone course is intended to integrate the knowledge and hands-on experience that the student has acquired from the foundation, core, and elective coursework required for the program in the course under the guidance of the course instructor. The instructor determines the course objectives and scope based on the electrical engineering curriculum and technology trend. The instructor guides the students to develop their integration ability. The student shall take the capstone course near the end of his/her program of study.
Prerequisite: Must be in the final semester of the program.
Professional Development

P450G Career Development (1 unit)
This course is designed for the graduate students to take in preparation for becoming working professionals. Topics include effective communication strategies, emotional intelligence, diversity and cultural awareness, professional behavior, and interview skills.
Doctorate Degree Program

The School of Engineering offers one terminal degree program, Doctor of Computer Engineering (DCE).

The doctorate degree program is designed for the students to attain specialized and practical competence in the field of study in computer engineering and in the workplace. The DCE program is offered with the emphasis on practical and real-world applications in both the coursework and the doctoral dissertation requirements.

- Objectives

The doctorate degree program in computer engineering emphasizes both mastery of subject matter as well as an understanding of related research and research methodology for professional-oriented projects/dissertations. The program aims to develop the student’s ability to integrate knowledge and apply practical research to address problems and issues in the workplace. It is designed for the student to accomplish specified goals and objectives and contribute to competence in the subject area or profession at an advanced level.

- Accreditation for DCE

Northwestern Polytechnic University is accredited by the Accrediting Council for Independent Colleges and Schools (ACICS) to award doctorate degrees. The current scope of recognition for ACICS, as approved by the U.S. Department of Education and the Council for Higher Education Accreditation, includes diploma programs and degree programs through the Master’s degree. Therefore, accreditation of a doctoral program by ACICS does not make the program eligible for purposes of participation in federal student aid programs, as described in Title IV of the HEA. NPU may confer only professionally-oriented doctorate degrees. Unlike academic doctoral degrees that prepare students to work in academia or research, professional doctoral degrees are designed to make students experts in their fields and in the workplace. As such, the outcomes for those earning a professional doctoral degree involve using knowledge and techniques to purposefully address problems and opportunities in their workplace.

- Doctoral Program Committee

The DCE program is governed by its Doctoral Program Committee. The committee is responsible for developing, modifying, and maintaining the doctorate degree program. Committee members include qualified NPU faculty and administrators as well as other qualified professionals or practitioners. The committee is knowledgeable in methods of research and in the subject matter, chaired by a credentialed individual with expertise in the program area. The doctoral students work with the committee members to pursue their doctoral studies.

The doctorate degree program also receives advice and guidance from its Advisory Committee comprised of members from similar accredited doctoral programs and past or future employers of the graduates.

- Applicant Qualifications

1. Earned master’s degree with a cumulative GPA of 3.0 or above from an institution accredited by an agency recognized by the U.S. Department of Education.

   A bachelor’s or master’s degree in electrical engineering, computer engineering, computer science, or related field is required.

2. Strong interest in advanced study in the chosen subject area,

3. Independent research ability,

4. English proficiency,

5. Previous work experience related to student’s field of study is preferred. Students with no or little experience in the work environment they will be prepared to enter will be required to conduct curricular practicum before graduation.

- Application Material

1. A completed online application form for the doctorate degree program,

2. Application fee,

3. Official transcripts from all colleges and universities attended and certified degree document(s). All official transcripts must be received before the admission evaluation. Applicants enrolled in courses at another institution at the time of application will have 60 days after the completion of the courses to provide the updated transcript. Any other transcripts submitted after the admission evaluation will not be accepted. Failure to observe this requirement will result in placement of the student in a non-degree status.
4. **English Requirement**

(a) International students (holding F1 status) should have English skills to effectively communicate with faculty, staff, and other students. A TOEFL score of 550 on paper-based test, or 213 on computer-based test, or 79 on internet-based test, or an IELTS score of 6.5 is required to enter the doctorate degree program.

(b) Non-international students (with non-F1 status) whose native language is English or who used English as the official language in their undergraduate studies are considered meeting the English entrance requirement. Others follow the same requirements as that for international students described in (a). Those who are in the U.S. at the time of application for admission have the option to take the on-campus English Placement exam (EPE) in place of TOEFL/IELTS before admission evaluation will be made for them. The EPE passing score for the doctoral program applicants is higher than that for the other applicants.

5. **Entrance Exam**: Applicants are required to take either the GRE or the on-campus equivalent test before or on the New Student Orientation Day. For taking the GRE administered by the ETS, NPU’s *Institution code for reporting the GRE scores is 5485*. The score is primarily used for reference and analysis purposes.

6. **A professional work history or a professional vita**. Applicants with prior work experience in his/her study field must also submit an employment certification letter issued by the previous employer to certify the following for the applicant: Company name and address, supervisor’s name and contact information, applicant’s previous job title, and a brief job description.

7. Each applicant to the DCE program is required to submit a **Statement of Purpose (SOP)**. The SOP must describe the applicant’s background preparation, motivation, and reason why he/she considers him/herself having the qualifications to pursue the DCE degree; it must also describe the applicant’s research interest.

8. An international student is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

- **Notification of Admission**

Upon approval of admission, prospective students will receive a notification of admission status. An applicant may be admitted with full or conditional admission status. An applicant denied for admission will receive an explanation for their denied application. Processing times will vary. Processing begins upon receipt of all hard copies of required documents as instructed, and not upon simply submitting an application.

- **Confirming Intent to Report**

All accepted applicants are required to confirm their intent to report to the university to reserve their place in the accepted term. Instructions, applicable fees and due dates are provided in the acceptance package.

- **Cancellation of Admission**

If an applicant is accepted into a doctorate degree program for a given semester and does not begin classes in that semester, admission will automatically be canceled. The prospective student’s application records (transcripts from previous colleges, financial support documents for international students, and standardized test scores) are kept on file for a period of six months from the semester start date. If the applicant then wishes to be considered for readmission in a later semester, he/she will be required to resubmit an application form and pay the application fee. A reevaluation of admission will be made for the applicant.

- **Transfer of Credit**

Graduate course credit earned at other accredited higher education institutions may be transferable to meet the student’s graduation requirements if the courses are closely related to the engineering course requirements in the student’s intended program of study and the grade earned meets the requirement
stated below. If the applicant’s previous master’s degree is in the field of electrical engineering, computer engineering, or computer science, a maximum of 36 graduate units may be granted as transfer credits. If the previous master’s degree is in a different field, a maximum of eighteen (18) graduate semester units may be transferred towards the doctorate degree. Course credits to be transferred must be earned with a grade of B or better.

- **Definition of a Trimester/Semester Unit:**

  One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

- **Conversion Factor:**

  1 quarter unit = 0.66 trimester/semester unit

- **Admission Evaluation**

  The admission committee for the DCE program will conduct an admission evaluation for each applicant based on the official records received from the applicant. An evaluation report will be generated for the applicant; it includes an academic background evaluation and credit transfer information. A layout of the program requirements is also given in the report.

- **Tuition**

  Tuition for courses taken to fulfill the graduation requirements for the Doctor of Computer Engineering program is $450/unit.

  Refer to the sections on “Tuition and Fees” and “Refund Policy” in this catalog for other fees and refund information.

- **Academic Information**

  Refer to the section on “Academic Information” in this catalog for the academic policies and regulations observed by all students.

- **Graduation Requirements**

  1. A minimum of 96 semester units beyond the bachelor’s degree are required to complete the study of a doctoral degree program, of which 84 units are for coursework and a minimum of 12 units are for a doctoral dissertation or a comprehensive research project. Transferred graduate credits, up to 36 semester units, are included in the total requirements.

  2. **Length of Study:** The length of study in a doctorate degree program is a minimum of three (3) years or nine (9) semesters and a maximum of seven (7) years. The normal length of study for a student with a master’s degree is 3-5 years. A request for an extension of the study period beyond 7 years due to special reasons requires approval by both the Doctoral Program Committee and the School Dean.

  3. The DCE curriculum is presented in a sequence of course categories, in the order of the level of study involved, ending with the doctoral dissertation courses. Courses numbered in the 500’s and above are graduate courses. Several courses numbered in the 400’s with a “G” suffix are scheduled among the foundation and core course requirements and students may earn graduate credit by taking these courses at NPU.

  The doctoral student is advised to take the required courses by following the specified sequence, unless otherwise permitted by the registration advisor.

  4. All courses require appropriate usage of research and learning resources.

  5. **Checkpoint:** When the DCE student completes the Foundation Requirements and the Core Requirements listed in sections I and II in the curriculum below, the DCE program administrator will conduct a review of the student’s academic records. If the student has made satisfactory progress by maintaining at least a 3.0 CGPA, he/she will be notified to take three (3) written **Qualifying Examinations (QE).**

  6. The QE consist of three (3) subject areas. The student is given the option to choose the three subject areas from a list given by the Doctoral Program Committee.

  A DCE student failing the QE the first time may be given a chance to take the exam after six (6) months. The second chance is the last chance for the student to take the exam. The second exam must be taken within one year after the first exam. Failing the QE the second time will disqualify the student from a pursuit of the DCE degree.

  7. The doctoral student is required to maintain a minimum of 3.0 CGPA every semester during the entire tenure of study. In addition, a grade of
“B” or better is required in all courses. A doctoral student on academic probation status is given one semester to regain the required CGPA. Failure to do so will result in a dismissal of the student from the doctorate degree program.

8. **Dissertation**: Students enrolled in the doctoral dissertation or project courses must follow the requirements specified in the Doctoral Student Handbook for the DCE program. The goal of the dissertation research is to apply technologies, knowledge, or concepts in a new way to a workplace problem.

Each doctoral student’s dissertation or comprehensive research project must be reviewed, evaluated, and assessed by the student’s Dissertation Committee (DC) which has been approved by designated members of the Doctoral Program Committee of the DCE program; the DC must include at least one individual who is either from another appropriately accredited institution within the subject area or a professional who has earned a terminal degree.

A student unable to complete the dissertation or project after earning 12 units in the dissertation/project course is required to continue to enroll in the 6-unit doctoral dissertation course part-II as a continuing student and pay at the regular unit tuition rate until completion of the dissertation/project. Extra credits earned for repeatedly taking the dissertation/project cannot substitute for other course requirements.

9. At least one peer-reviewed journal or conference publication is required of each doctoral candidate before the doctoral student graduates with the DCE degree. The publication should be in the student’s research area and the student must be the first author of the publication.

10. Students with no or limited related work experience are required to engage in curricular practicum before graduation. A student may earn a maximum of 6 credit units through practicum.

11. An approved petition for graduation must be on file.

12. The student must maintain good standing with the University.

- **Student Discipline, Student life, and Facilities**

Refer to the sections on “Student Discipline”, “Student Life”, “Facilities”, and others for relevant information unless otherwise stated in this section on “Doctorate Degree Programs”.

- **Faculty**

All faculty members serving as doctoral dissertation/project or academic advisors must possess graduate and terminal degrees, have demonstrated proper academic preparation and experience, and hold an educational philosophy consistent with the University to encourage the best efforts of each learner. Faculty members are encouraged to engage in practical or scholarly research and to publish in professional journals.

Faculty members are to inspire, motivate, and direct student usage of the learning resources.

- **Library & Instructional Resources**

Library and instructional resources are vital to the faculty as well as the doctoral students in their teaching/learning and research activities. The school is equipped with its on-campus learning facilities as well as the online learning resource environment to meet such needs. In this catalog, detailed information is described in the sections on “Teaching and Research Facilities” and “The University Library and Digital Campus”. In addition, the university learning resource facilities provide specific research tools to support the doctoral students in their coursework and research activities.
Doctor of Computer Engineering (D.C.E.)

Program Administrator: Dr. Henry Chang, D.C.E.

Objectives: The DCE degree program is intended to develop the student’s ability in advanced academic study, practical research, and professional expertise in computer engineering. The learning shall not only lead to an understanding of complex modern computer engineering technology and systems but also develop the ability of innovative thinking and technology integration. Current research emphases are in the fields of IC design, SOC design and nano-domain system integration, intelligent and ubiquitous embedded systems development and applications, and the newly emerging green technology such as cloud computing, virtualization, and mobile technology and applications.

Background Preparation

Students admitted into the DCE degree program are required to have proper computer engineering background preparation for taking the graduate level coursework. The DCE Admissions Committee is responsible for making an evaluation of each applicant’s academic background to determine whether there are any deficiencies the applicant is required to clear.

A minimum of 96 semester units of graduate study beyond a bachelor’s degree are required for the DCE program. Among them, 84 units are required to be graduate coursework and a minimum of 12 units are in doctoral dissertation or comprehensive research project work. Courses at the 4xxG level in the program curriculum must be taken at NPU in order to earn graduate credits. The student must meet prerequisite requirements when taking any of the following courses.

The Foundation Requirements are the first group of courses that the student is required to take.

I. Foundation Requirements (12 units - First semester of study)

(Fundamentals of embedded engineering, software design, network engineering fundamentals, and signal processing and simulation techniques)

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE450G Fundamentals of Embedded Engineering (3)</td>
</tr>
<tr>
<td>CS464G Software Design and Implementations (3)</td>
</tr>
<tr>
<td>CS470G Network Engineering and Management (3)</td>
</tr>
<tr>
<td>EE450G Systems Analysis and Simulations (3)</td>
</tr>
</tbody>
</table>

II. Core Requirements (18 units - First-second year of study)

The student is required to take at least 18 units of coursework (6 courses) from the following list of courses. The student is advised to consider his/her dissertation research area of interest when selecting courses to meet the requirements in sections II and IV.

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS480G Java and Internet Applications (3)</td>
</tr>
<tr>
<td>EE461G Digital Design and HDL (3)</td>
</tr>
<tr>
<td>EE467G Introduction to Nanoengineering (3)</td>
</tr>
<tr>
<td>EE488G Computer Architecture (3)</td>
</tr>
<tr>
<td>CE521 Real-time Systems and Programming (3)</td>
</tr>
<tr>
<td>CE530 Embedded Software Design in Linux (3)</td>
</tr>
<tr>
<td>CS501 Advanced Structured Programming and Algorithms (3)</td>
</tr>
<tr>
<td>CS510 Advanced Unix/Linux Programming (3)</td>
</tr>
</tbody>
</table>
Upon completing the core requirements, the student is required to take three qualifying examinations.

**Qualifying Examinations (QE):** The QE consist of three (3) subject areas. The student has a chance to select three exam subjects from a list provided by the Doctoral Program Committee.

After the student has passed the Qualifying Examinations (QE), he/she is allowed to continue in the DCE program and begins to take courses listed in section III. The student is now a DCE candidate.

### III. Post-Candidacy Requirements (6 units - Second year of study)

(Research methodology)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCE601</td>
<td>Research Methodology - I</td>
<td>3</td>
</tr>
<tr>
<td>DCE602</td>
<td>Research Methodology - II</td>
<td>3</td>
</tr>
</tbody>
</table>

### IV. Advanced Studies (24 units - Third year of study)

The doctoral candidate is required to take at least 24 units of advanced graduate courses to strengthen his/her background in preparation for his/her dissertation endeavor as well as to broaden his/her cross-disciplinary technical capabilities. The following are suggested course clusters provided to the DCE candidate for an in-depth study in his/her chosen research area; each cluster of courses corresponds to a major research area.

#### Area 1. VLSI and Nanoengineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE505</td>
<td>Advanced Digital IC Design</td>
<td>3</td>
</tr>
<tr>
<td>EE511</td>
<td>Advanced Analog IC Design</td>
<td>3</td>
</tr>
<tr>
<td>EE553</td>
<td>System on Chip (SOC) Design</td>
<td>3</td>
</tr>
<tr>
<td>EE584</td>
<td>Quantum Concepts and Applications in Nanoengineering</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Area 2. Embedded Systems Design

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE522</td>
<td>Embedded Design in Networking Environment</td>
<td>3</td>
</tr>
<tr>
<td>CE523</td>
<td>Embedded Design in Device Driver Environment</td>
<td>3</td>
</tr>
<tr>
<td>CS551</td>
<td>Mobile Computing for Android Mobile Devices</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Area 3. Internet Technology and Mobile Computing

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS501</td>
<td>Advanced Structured Programming and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CS526</td>
<td>Advanced Web Programming</td>
<td>3</td>
</tr>
<tr>
<td>CS550</td>
<td>Data Mining and Business Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>CS551</td>
<td>Mobile Computing for Android Mobile Devices</td>
<td>3</td>
</tr>
<tr>
<td>CS570</td>
<td>Big Data Processing – MapReduce Programming</td>
<td>3</td>
</tr>
<tr>
<td>CS571</td>
<td>Cloud Management – Hadoop Administration</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Area 4. Network Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS565</td>
<td>Advanced Network Management</td>
<td>3</td>
</tr>
<tr>
<td>CS571</td>
<td>Cloud Management – Hadoop Administration</td>
<td>3</td>
</tr>
<tr>
<td>CS575</td>
<td>Network Analysis and Testing</td>
<td>3</td>
</tr>
</tbody>
</table>
The doctoral candidate has the option to take courses in or outside the above cluster courses to meet the Advanced Studies requirement in section IV. Courses must be numbered at the 500 level or above in computer engineering areas (courses with EE, CE, CS designations).

V. Electives (24 units - Fourth-fifth year of study)

The student is required to take at least 24 units of graduate courses, which need not be limited to engineering, numbered at the 500 level or above to meet the electives requirement. The student is reminded that a cross-disciplinary study of subjects can be desirable as the fast changing electronics and computer industries have become more demanding on engineers to have multidisciplinary skillsets.

Curricular Practicum: Students without prior practical experience in related fields are required to engage in curricular practicum to work on company projects that are directly related to the student’s dissertation research or course of study. Others have the option to conduct curricular practicum when applicable. No more than 6 units earned from curricular practicum courses are counted for elective credit. The student must observe the rules required for taking the practicum courses.

VI. Doctoral Dissertation (12 units - Fifth year of study)

A Dissertation Committee (DC) must be formed by the doctoral candidate and approved by the DCE Program Committee before the student starts his/her doctoral research work. The doctoral candidate is required to earn a minimum of 12 units in dissertation coursework to meet the graduation requirement. Dissertation proposal presentation and dissertation defense requirements are described in the DCE Student Handbook.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCE698</td>
<td>Dissertation – I</td>
<td>(6)</td>
</tr>
<tr>
<td>DCE699</td>
<td>Dissertation – II</td>
<td>(6)</td>
</tr>
</tbody>
</table>
### Course Descriptions

**Doctor of Computer Engineering Program, School of Engineering**

Doctorate degree courses are numbered in the 500s and above. The DCE degree program allows for a limited number of credits for 400 level courses with a “G” suffix in the Foundation Requirements.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>450G-490G</td>
<td>Mezzanine courses for graduate students</td>
</tr>
<tr>
<td>500-699</td>
<td>Graduate level courses</td>
</tr>
</tbody>
</table>

For information on prerequisite subjects numbered below 450, refer to the section on Course Descriptions for the Undergraduate Degree Programs, School of Engineering.

Courses are listed by subject: Computer Engineering, Computer Science, Curricular Practicum, Electrical Engineering.

Each course description is followed by its prerequisite information expressed in course numbers.

Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

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**Computer Systems Engineering**

**CE450G Fundamentals of Embedded Engineering (3 units)**

This is the first in a series of embedded systems courses designed for students who are interested in learning real-time embedded systems and practicing real-time programming of embedded systems. Topics include hardware issues including platform, microprocessors commonly used in these systems and how a microprocessor works in such systems, concept of memory, registers, I/O; interrupt generation and handling in an embedded system; the concept of real-time programming, multi-task, concurrency, mutual exclusion; overview of real-time kernel/OS, drivers; system initialization and startup, and debug issues. Hands-on exercises are required.  

**Prerequisite:** CE450

**CE450LG Embedded Engineering Lab (1 unit)**

This is a drill course designed to be taken with the course CE450 Fundamentals of Embedded Engineering. The students gain hands-on experience with embedded systems programming and design. They are also guided to work on projects involving controller systems.

**Prerequisite:** CS380

**CE521 Real-Time Systems and Programming (3 units)**

This is the second in the embedded systems series. By examining an off-the-shelf real-time operating system, students will gain hands-on experience in real-time operating system programming and implementations. Specific topics 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.

**Prerequisite:** CE450

**CE522 Embedded Design in Networking Environment (3 units)**

This course is designed for the students to learn protocol stack implementation/porting in a real-time operating system (RTOS) kernel environment. Students learn the concept of network protocol stack implementation/porting, embedded real-time system software architecture, and real-time operating systems. They also learn to design and write programs as a collection of independent and concurrent tasks, non-preemptive and preemptive multi-tasking, task scheduling, and task synchronization and intertask communication including semaphores and message queues. Industry standard RTOS will be used for practice and projects.

**Prerequisites:** CE450

**CE523 Embedded Design in Device Driver Environment (3 units)**

This course investigates the operating system (Windows NT, Linux, or Unix) components that interact with device drivers, the device driver building and debugging process, device driver architecture, functionality and the relevant kernel APIs. Topics include: operating system architecture; I/O API; operating system kernel; building, loading and debugging device drivers; device driver entry points; device driver data structures; I/O request processing; plug, play and power management; interrupts and timers; memory
management; direct memory access; and timing. The goal of the course is to present comprehensive coverage of the operating system kernel, HAL, device drivers and the related APIs. Upon completion of the course, the student should be able to develop, build, install and test basic device drivers, as well as to port existing drivers from one operating system to another. Hands-on practice is required.

**Prerequisite:** CE450

**CE527 Embedded Systems in Windows CE Environment**  
(3 units)

This is a project-oriented course emphasizing hands-on practice. Students will learn how to create and develop embedded applications in the Windows CE environment. Through extensive hands-on lab work and programming exercises, students learn how to use Windows CE on a new hardware board, install and develop applications in a cross-platform development environment, load an image on the target system, and verify the applications on the target system.

**Prerequisite:** CE450

**CE530 Embedded Software Design in Linux**  
(3 units)

This course prepares students to enter the challenging world of embedded Linux. It covers the following key topics: comparing Linux and traditional embedded environments, comparing leading embedded Linux processors, understanding the details of the Linux kernel initialization process, learning the basic concepts about Linux drivers, learning about the special role of bootloaders in embedded Linux systems - with specific emphasis on U-Boot, using embedded Linux file systems, understanding the Memory Technology Devices subsystem for flash (and other) memory devices, mastering debugging tools such as gdb, KGDB, learning many tips and techniques for debugging within the Linux kernel, learning how to maximize productivity in cross-development environments, learning to prepare an entire development environment, including TFTP, DHCP, and NFS target servers; and learning to configure, build, and initialize BusyBox to support a set of unique requirements. Hands-on exercises are required.

**Prerequisite:** CE450

**CE589 Special Topics**  
(3 units)

Special topics courses are offered to graduate students in Computer Systems Engineering programs by current faculty members or invited guest speakers to expose the students to emerging technologies related to their studies. These courses are conducted the same way as regular courses.

**Prerequisite:** CE450

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**Computer Science**

**CS464G Software Design and Implementations**  
(3 units)

This course is designed to use C/C++ to achieve the goal of teaching the students the design methodology for algorithm development. The objective is to develop the students' programming ability with proper logical and object-oriented thinking processes. The course covers two main topics: (1) Problem specification and analysis - understand the problem, analyze it, and translate the human thinking into a computer program; (2) Object-oriented design and analysis - understand data abstraction, encapsulation, aggregation, and inheritance. These concepts are the foundation for modern object-oriented programming languages such as C, C#, and Java. Hands-on practices are required.

**Prerequisite:** CS360

**CS470G Network Engineering and Management**  
(3 units)

This course is designed to introduce network communications. Topics include network layered models (OSI, TCP/IP), architecture, principles, service models and protocols; data communication basics, switching, routing, security, network management, and wireless and mobile networks. Modern Internet technologies and implementations are presented in case studies. Hands-on exercises are required.

**Prerequisite:** CS360

**CS470LG Network Engineering Lab**  
(1 unit)

This is a drill course designed to be taken with the course CS470 Network Engineering and Management. The students learn network communications through weekly hands-on drill sessions. They learn protocols used in network data communication, routing design, and network management. The students will gain the experience of using popular routers and switches in their exercises.

**Prerequisite:** CS360L

**CS480G Java and Internet Applications**  
(3 units)

This course introduces students to the Java language, programming with object-oriented construct, GUI design and graphics programming, and core Java libraries. Students will learn Java language basics such as syntax and classes, inheritance, interfaces, reflection, graphics programming, event handling, user-interface components with Swing, Java applets, exception handling, stream, and files. Hands-on exercises are required.

**Prerequisite:** CS360

**CS480LG Java Programming Lab**  
(1 unit)

This is a drill course designed to be taken with the course CS480 Java and Internet Applications. The
students gain Java programming skills through hands-on exercises in this weekly lab course. Weekly hands-on exercises normally correspond with the lecture material offered in each week.

Prerequisite: CS360L

CS501 Advanced Structured Programming and Algorithms (3 units)
This course provides an in-depth analysis and efficient use of algorithms to solve problems. Well-structured programs are studied; modular, top-down design is emphasized. Topics include the use of data structures techniques to design efficient algorithms and analyze their complexity, efficient implementation of combinatorial algorithms, sorting, searching, and geometric problems, and branch and bound algorithms. Hands-on exercises are required.
Prerequisite: CS480

CS510 Advanced UNIX/Linux Programming (3 units)
This course is designed for students to gain fundamental knowledge of and hands-on experience with programming in the UNIX/Linux environment. Students will learn to program in C with UNIX/Linux system calls and other advanced topics such as the UNIX file system, process control, signals and inter-process communications. Students are required to do a term project with a substantial amount of programming. Upon completion of this course, students should be able to develop real-world UNIX/Linux applications. Hands-on practice and projects are required.
Prerequisite: CS470

CS515 UNIX/Linux Network Programming (3 units)
This course is designed for graduate students to gain hands-on experience in UNIX/Linux network programming. The students will learn to develop UNIX/Linux network applications using a number of UNIX/Linux network programming interface techniques including Sockets, XTI, and RPC. Topics include: an overview of transport layer (TCP/UDP), TCP sockets, UDP sockets, threads and client-server design, XTI, RPC, and Streams. Hands-on exercises and projects are required.
Prerequisite: CS470

CS521 Software Project Management (3 units)
This course teaches students to apply current software development approaches to managing modern complex software projects. Practical strategies, tactics, and designs are discussed together with realistic exercises. Topics include software development process, project planning, requirements definition, design specification, usability engineering, verification and validation, project and change management, and process quality improvement. Students are required to participate in all course activities to develop a real-world software product.
Prerequisite: CS360

CS522 Software Quality Assurance and Test Automation (3 units)
This course teaches students to learn practical static and dynamic techniques that allow software development teams to engineer high quality products. The course begins with an overview of modern software development approaches. It then introduces quality management and test development based on preventive and agile principles as well as quality risk analysis. It covers system, unit, integration, performance, and automated testing techniques. Quality improvement models for software development and testing are discussed. Several test automation tools are demonstrated in class. Students gain hands-on experience through homework assignments and exercises and learn to test real-world applications.
Prerequisite: CS480

CS526 Advanced Web Programming (3 units)
This course teaches students to learn how to build modern web applications with web application frameworks. It helps students understand how the web application framework performs, and shows students how to use various features of the framework to solve many problems in real-world development scenarios they're likely to face. In the process, students will learn how to work with HTML, CSS, JavaScript, the Object-relational Mapping Framework, and other web technologies. Students will start by learning core concepts such as the Model-View-Controller architectural pattern, and then work their way toward advanced topics as well as mobile web development techniques.
Prerequisite: CS360

CS527 Advanced .NET Windows Programming (3 units)
The goal of this course is to provide students with the knowledge and skills needed to develop C# applications and components for the Microsoft .NET Platform. Topics cover using system types, collections, and generics to help manage data; developing services, application domains, and multithreaded applications; creating a UI for a Windows forms application by using standard controls; using ADO.NET and XML; implementing printing and reporting functionality; enhancing usability; implementing asynchronous programming techniques to improve the user experience; developing Windows forms controls; and configuring and deploying applications. Hands-on practice is required.
Prerequisite: CS480
CS532 Advanced Internet Programming and Design (3 units)
This course is designed to give the students an in-depth understanding of Java programming techniques. The course focuses on advanced Java language features and packages which are essential for building a variety of application architectures. Topics include Java techniques of XML, JNI, thread, network programming, generic programming concepts of JDK-1.5 and beyond, and internalization. Upon completion of this course, the students should be well prepared to create enterprise-wide, Java-centric solutions to client/server problems involving Java and networks. Each technology topic will cover its uses, implementation, and language issues. Students are required to implement a project for each Java technique. Hands-on exercises are required.
Prerequisite: CS480

CS535 Network Security Fundamentals (3 units)
This course addresses the security issues on the internet and the web. Major topics include issues related to internet infrastructure and applications running on the internet, techniques to reduce security risks, and an introduction to the role of security as an enabling technology for electronic commerce. The course includes an overview of internet and web security, its applications and legal issues, encryption and cryptography, SSL and browsers, web servers, and Java security.
Prerequisite: CS470

CS536 Modern Internet Technology Design and Applications (3 units)
This course introduces Java 2 platform Enterprise Edition (J2EE/JEE) of which the Enterprise JavaBean (EJB) component architecture is a vital piece. With J2EE/JEE, one can rapidly construct distributed, scalable, reliable, and portable secure server-side, client/server, threaded network programming deployments. Although J2EE/JEE is a conglomeration of concepts, programming standards, and innovations, this course will focus on EJB, JNDI, transaction and security aspects of J2EE/JEE with real-world programming examples. Hands-on practice and projects are required.
Prerequisite: CS480

CS540 Advanced Database Administration (3 units)
This course provides an in-depth understanding of the Oracle Database Management System. Emphasis is on the latest Oracle database architecture, database configuration and administration. Topics include logical/physical database layout, database server processes, database creation, various database physical objects; client/server configuration, multi-threaded server configuration, database storage management, database security, database utilities, database monitoring, partitions, and database backup/recovery methods. Hands-on practice is required.
Prerequisite: CS457

CS547 Advanced Database Design and Analysis (3 units)
This course is intended for graduate students to further explore database server development and database tuning. The course specifically details procedural extensions to SQL to develop stored procedures, functions, packages and database triggers. In addition, it covers database performance tuning from an application development point of view by exploring query optimizer, database hints, and various database access methods. Hands-on exercises are required.
Prerequisite: CS457

CS548 Web Services Techniques and REST Technologies (3 units)
This course covers the fundamental concepts of the 3-tier model commonly used in Enterprise Application development. Topics include the Spring Framework, JDBC with database applications, JPA (Java Persistence API), Hibernate, Spring MVC, Java Servlets, and JavaBeans. In addition, the students will learn the best practice development approach using the Sprint Framework with JDBC or ORM (Object Relational Mapping) tools to map business domain object models to the underlying relational database. At the end of this course, the students shall have a fresh view on both the fundamental and advanced skills to implement large scale enterprise systems. Hands-on exercises are an integral part of the course.
Prerequisite: CS480

CS550 Data Mining and Business Intelligence (3 units)
This course introduces methods and techniques for using stored business data to make business decisions. The student will learn data types including operational or transactional data such as data for sales, cost, and inventory; nonoperational data such as forecast data and macroeconomic data; and meta data, and learn their patterns, associations, or relationships, and how to use these information for decision making. Modern datawarehouse concepts will also be introduced. Specific examples of businesses using data mining techniques will be given in the course. The student is required to work on course projects by using modern data analysis software and referring to cases studied.
Prerequisite: CS457

CS551 Mobile Computing for Android Mobile Devices (3 units)
Google's Android mobile phone software platform may be the next major opportunity for application software developers. Android has the potential for removing the barriers to successful development and sales of a new generation of mobile phone
application software. Just like PCs which have created markets for desktop and server software, Android will create a new market for mobile applications by providing a standard mobile phone application environment. This hands-on course focuses on developing applications for Android, including map-based applications, camera-based applications, SMS, etc. Advanced development topics are also covered, including security, IPC, and certain advanced graphics and user interface techniques.

**Prerequisite:** CS480

**CS555 Developing Applications for Windows Mobile Environment** (3 units)
This course focuses on the unique challenges, methods, tools, and technologies for using Windows Mobile to develop software applications for wireless and mobile devices, such as personal digital assistants (PDA) and smart mobile phones. Topics include user interface design for small-screen, multi-channel devices, programming techniques and memory management for devices with limited memory and processing power, data synchronization for mobile databases, and wireless network programming.

**Prerequisite:** CS470

**CS556 Mobile Applications on iPhone Platform** (3 units)
This course provides an in-depth study of the design, development and publication of object-oriented applications for the iPhone and iPod Touch platforms using the Apple SDK. Students will learn to utilize Objective-C and the various SDK frameworks to build iPhone & iPod touch applications under Mac OS X.

**Prerequisite:** CS360

**CS557 Web Front-end Programming for Mobile Devices** (3 units)
This course focuses on cross-platform software development techniques. Topics include Javascript, HTML5, Cascading Style Sheets (CSS3), iQuery Mobile, AJAX, mobile platforms, mobile website development, and mobile applications development using PhoneGap, etc. Hands-on practices are required.

**Prerequisite:** CS360

**CS558 Mobile Apps Development** (3 units)
This course provides the students an in-depth study of the tools and knowledge necessary to develop applications for mobile platforms, specifically for Apple iOS and Google Android devices. Differences between mobile and desktop computing will be examined; sample mobile apps will be dissected; tool suites for the development of new mobile apps will be covered, including programming languages such as Objective-C and Java, frameworks such as Cocoa/iOS and Android Application Framework, and libraries and integrated development environments such as Xcode for iOS and Android Studio for Android. Hands-on exercises are required.

**Prerequisite:** CS480

**CS565 Advanced Network Management** (3 units)
This course is designed to give graduate students an in-depth understanding of and a hands-on experience in the management of network systems and applications. Emphases are on simple network management protocol (SNMP) management, MIB, management tools, system and applications. Current widely-used applications by industry will be used to demonstrate the management concepts. Computer-based training software will be used to check/verify the students’ network management skills in order to ensure they are prepared for the industry challenges. Topics include Network Management fundamentals; OSI-MAN, SNMP and TMN standards; RMON and ITU TMN architecture; inside structure and practical applications of SNMP, SNMP2, SNMP3, RMON, RMON2, and MIBs. Hands-on exercises are required.

**Prerequisite:** CS470

**CS570 Big Data Processing – MapReduce Programming** (3 units)
This course introduces the Hadoop framework in depth, teaching the MapReduce concurrent programming paradigm. Students will learn how to use different MapReduce patterns using Hadoop, and apply these techniques to big data analytic problems, such as PageRank, machine learning, and social network graph mining. Hands-on programming skills on Apache Hadoop are emphasized in this course.

**Prerequisite:** CS480

**CS571 Cloud Management – Hadoop Administration** (3 units)
This course provides a practical approach to developing Java applications on top of the Hadoop platform. It presents the material as small building blocks with a coverage of each component in the Hadoop stack. Students will learn Hadoop's architecture and its underlying parts with top-down identification of component interactions within the Hadoop ecosystem. The course then provides in-depth coverage of the Hadoop Distributed FileSystem (HDFS), HBase, MapReduce, Oozie, Pig, Hive, and several other tools. To reinforce concepts, each section is followed by a set of hands-on exercises.

**Prerequisite:** CS480

**CS575 Network Analysis and Testing** (3 units)
This course covers computer network analysis, testing techniques, and experience-based strategies to isolate and solve network problems. Topics include wiring and cable testing issues, transmission encoding techniques, dissecting the
IEEE 48-bit MAC address, the impact of different types of broadcast traffic, operational details and analysis considerations for switches, Ethernet and Token Ring operational details and analysis, the IEEE 802.2 LLC protocol, datagrams and routing, IP specifics, protocol analysis and troubleshooting, baselining throughput and latency. Hands-on exercises using protocol analyzer are required to reinforce the topics.

Prerequisite: CS470

CS589 Special Topics (3 units)
Special topics courses are offered to graduate students in the Computer Science program by current faculty members or invited guest speakers to expose the students to emerging technologies related to their studies. These courses are conducted the same way as regular courses.

Prerequisite: depending on topic

CS673 Cryptography and Network Security (3 units)
The course addresses security risks in computer networks and computer systems and the fundamental techniques used to reduce these risks. It also gives an introduction to the role of security as an enabling technology for electronic commerce. The course is divided into four major parts: (1) Fundamentals of Network Security and System Security, (2) Fundamentals of Cryptography: This is probably the most important part of this course. This part involves basic reasoning and understanding of cryptography. This includes the fundamentals of symmetric and asymmetric key systems, message integrity (hashing functions), digital signature, digital certificate, key management, and familiarity with common standards for these techniques; (3) Cryptography in real world applications: Several security applications will be discussed, including PGP, SSL, IPSec, with SSL being the focus - major components of SSL protocol and its role in electronic commerce with be covered. Students will learn how to set up an https web server and how to apply and integrate digital certificates with browsers, web servers, and communication protocols on the Web; (4) Hands-on Cryptography: This part is for those who are interested in implementing security software using cryptography. Several software libraries will be discussed, including Open SSL, RSA's libraries, Microsoft's security libraries, and Java-based security software. The topics include JCE, JCA, JSSE, JAAS, Language-Level Security, Java Virtual Machine-level Security, API-Level Security Features, Using the Security Packages, Browser-level Security, and Signing Java Programs.

Prerequisite: CS470

CS676 Network Security Design and Implementations (3 units)
This course is designed for students who have an interest in learning network security technology and wish to become information security professionals. The course covers the fundamentals of network security; for example, firewall, VPN, NIDS, Anti-Virus, and Content-filtering. It also covers the cutting-edge technologies, like Phishing and Malware fighting. In addition, the course also introduces security trends, strategy, policies, and security management. Real industry products will be introduced in this class. Students will gain hands-on experience in creating and maintaining internet firewalls as well as exposure to the integrated security products solution.

Prerequisite: CS470

Curricular Practicum

CPT501 Curricular Practicum (1 unit)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and instructions concerning this course are provided in the online application form. This is a part-time practicum course taken by the graduate student to work no more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.

Prerequisite: Refer to the instructions on the application and agreement documents.

CPT502 Curricular Practicum (2 units)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least
DCE689 Advanced Topics (3 units)
Advanced topics courses are offered to the doctorate program students in the DCE program by current faculty members or invited guest speakers to expose the students to emergent technologies related to their studies. These courses are conducted the same way as regular courses.
Prerequisite: DCE601

DCE698 Dissertation - I (6 units)
(Research/development and lab work)
This is the first of a two-part dissertation course series required for each doctorate student. The research and development and dissertation work are designed for the student to demonstrate his/her ability of independent research and development as well as integrating and applying original and practical research into the subject matter. The student should also demonstrate his/her clear understanding of related research and research methodology for professional-oriented projects/thesis. The Doctor of Computer Engineering student enrolls in this course after completing almost all other required coursework. A doctoral dissertation committee (DC) for monitoring the dissertation must be formed and approved by the Doctoral Program Committee before the student begins his/her dissertation work. The student works with his/her dissertation advisor throughout the project. The project must involve practical research and development effort which provides a first exposure to some fundamental issues in the domain of knowledge relevant to the student’s study fields.
Prerequisite: DCE602

DCE699 Dissertation – II (6 units)
(Research/development and lab work)
This is the second of the two-part dissertation course series required for each doctorate student. The doctorate student who has completed the first part of this course must enroll in this second course to continue his/her R&D work until completing the project. Upon completing the project, the student must submit his/her dissertation for a review by the DC; the student should also give an open forum dissertation defense to the DC members and other invited faculty members and outside guests. The student must receive the DC’s final approval for completing the doctoral dissertation course series. If the student fails to complete the dissertation by the end of the semester in which this course was registered, the student must retake this course.
Prerequisite: DCE698

Electrical Engineering

EE450G Systems Analysis and Simulations (3 units)
This course is an introduction to the basic concepts and principles of signals and systems. Both analog and digital signal processing techniques will be covered. Topics include analog signals and systems, digital signals and systems, LTI systems, Fourier transform, Z-transform, FFT, system stability, digital filter design, and network. Matlab software will be used to implement some of the DSP algorithms.
Prerequisite: MATH205

DCE601 Research Methodology - I (3 units)
This course focuses on how to conduct research as well as how to prepare a research plan or proposal for a scholarly journal article, dissertation, or thesis. The course will be conducted through formal lectures, seminars given by invited speakers, and the student’s engagement in practical research work. The student will be required to complete an applied research project.
Prerequisite: EE450

DCE602 Research Methodology - II (3 units)
This course focuses on research methods, particularly using advanced statistical analysis methods to prepare research papers for publication as scholarly journal articles or submission as dissertations or theses. The students may be required to submit their research papers for publication in various journals. The course will introduce various statistical analysis methods for testing hypotheses. The course will be conducted with various forms, including formal lectures, seminars given by invited speakers, and each student’s engagement in practical research work. The student will be required to complete an applied research project.
Prerequisite: DCE601

Prerequisite:

DCE98
EE450LG Signal Analysis and Simulations Lab (1 unit)
This is a drill course designed to be taken with the course EE450 Systems Analysis and Simulations. The students gain hands-on experience with MATLAB and learn to use the tool to solve signals and systems problems. They also learn ADC and DAC design concepts as well as to use structured programming to work on a development board project.
Prerequisite: EE450

EE461G Digital Design and HDL (3 units)
This course develops the students' ability to design commonly used basic building blocks of modern digital systems and provides them with a fundamental knowledge of the state-of-the-art design methodology, design considerations, and verification strategies for complicated digital hardware design. Topics include Verilog HDL basics, Logic modeling, state machine design and memory modeling using Verilog HDL. Additional topics on FPGA architectures, device vendors, FPGA design tools, FPGA applications and latest trend in the programmable logic industry are also covered. Students can use Verilog tools such as Synopsys VCS, Mentor ModelSim, Cadence NC Verilog, and Silo III Verilog Simulator from SimuCAD for their homework and design projects. Hands-on practice is required. Students are encouraged to take the HDL based sequence of courses EE461 and EE512 to gain knowledge and experience in semi-custom IC design using industry grade EDA design tools.
Prerequisite: EE323

EE461LG Verilog HDL Lab (1 unit)
This is a drill course designed to be taken with the course EE461 Digital Design and HDL. The students gain hands-on experience with Verilog simulation tools to learn logic design. They will have the chance to work on several design projects. They will also learn the essentials of several popular scripting languages: Perl, Python, Unix/Linux Shell.
Prerequisite: EE323 and EE323L

EE467G Introduction to Nanoengineering (3 units)
Recent development of the VLSI industry has significantly reduced its minimum feature size to several tens of nanometers. This development necessitates carrying out engineering at the nanoscale, which demands an understanding of how electrons behave in nano-materials. A primary consideration is the electron's quantum behavior. Revolutionary discoveries of natural scientific phenomena, which had lead to the development of man-made devices and instruments of technology in the 20th century, is reviewed in this course. The special spin properties of the electron, and of the photon, are discussed to prepare the students for a further discussion on the topic.

EE468G Computer Architecture (3 units)
This course introduces the organization, design, and applications of modern computer architectures from both hardware and software perspectives. Topics include performance benchmark, instruction set (for both RISC and CISC), computer arithmetic, memory, parallelism (instruction, data, and thread levels), I/O and storage, multicores processors and programming and GPU (Graphics Processing Unit). Hands-on labs involving HDL and SPIM simulations, assemblers, linkers, and multithread programming are required to enhance classroom learning.
Prerequisites: EE461 and CS204

EE505 Advanced Digital IC Design (3 units)
EE505 is an advanced course in digital circuit design that applies the knowledge of advanced circuit design concepts to Digital IC in state-of-the-art CMOS technologies. It emphasizes the design and optimization of circuit/layout for combinational logic gates, sequential logic circuits, arithmetic building blocks, and memory circuits. The challenges of today's digital integrated circuit design, such as scaling, process variation, signal integrity, timing issues, interconnectivity, and power consumption will be addressed specially. The circuit simulation tool (HSPICE), layout design tool (Virtuoso), and schematic entry tool (Composer) are used for homework assignments and projects.
Prerequisite: EE468

EE508 VLSI Design - Place and Route (3 units)
This course is the third in the VLDI Design series and introduces ASIC place and route. The course introduces the students to state-of-the-art physical design automation tools and techniques. Topics include design flow, library review, tool graphical interface, floor planning, power planning, timing driven placement, static time analysis (STA), CT-Gen, special routing, final routing, engineering change order (ECO), and run batch mode jobs. Hands-on exercises and projects are required.
Prerequisite: EE461

EE509 Mobile and Wireless Communication (3 units)
This course covers the concepts of frequency re-use, wireless communication channel characteristics, modulation and demodulation for wireless communications, equalization and channel coding, speech coding, multiple access techniques such as FDMA, TDMA, CDMA, FDD and TDD, and
commercial wireless communication standards such as AMPS, GSM, IS136 (TDMA), IS-95 (CDMA). Hands-on simulations are used to help students gain an in-depth understanding of wireless communication. Familiarity with communication theory and simulation tools such as MATLAB or system view is required.

(Note: This is an introductory course on wireless technologies. Any topic, such as GSM, TDMA, or CDMA can be expanded to a full-trimester course under Special Topics offerings.)

Prerequisite: EE450

EE511 Advanced Analog IC Design (3 units)
This course offers students extensive exposure to concepts and techniques in analysis and design of analog IC, including device modeling, basic circuit building blocks, feedback system, frequency response and noise. EDA tools may be used in homework assignments and projects.

Prerequisite: EE468

EE512 Application Specific Integrated Circuit Design (ASIC) (3 units)
In connection with EE461, this course is designed for students who intend to become logic designers using HDL based design methodologies. Topics include ASIC/CPLD/FPGA 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, Synopsys DesignTime (under dc_shell), Synopsys Prime Time, Cadence Silicon Ensemble, Mentor Calibre LVS/DRC, and Synplicity Synplify are used for homework assignments and projects.

Prerequisite: EE461

EE520 Advanced FPGA Design and Implementations (3 units)
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. The course will cover two major Xilinx FPGA architectures in detail. The student will learn to build various digital blocks such as combinational logic, sequential logic, finite state machines, RAM and DSP by studying the architectures of the FPGAs. Hands-on exercises are required.

Prerequisite: EE461

EE553 System on Chip (SOC) Design (3 units)
System on Chip (SOC) is composed of many functional modules such as processor, memory, digital IPs, analog/mixed signal modules, RF and interfaces on a single chip. This course will focus on ARM based on-chip bus platform, digital IP verification, and the trend and integration of SOC.

Prerequisite: EE488

EE584 Quantum Concepts and Applications in Nanoengineering (3 units)
At the frontier of technology, the feature size in VLSI chips has reached below 20 nanometers. This kind of development necessitates carrying out engineering at the nanoscale, which demands an understanding of how electrons behave in nanomaterials. To this end, key quantum concepts and their application in nanoeengineering will be discussed. Topics include: quantum tunneling, the spin behavior of the electron and of the photon, Magnetic Resonance Imaging, and quantum computation. A student hands-on project is required. Field-trip visits to leading high-tech companies and research laboratories in the Silicon Valley will be arranged. Students will have the opportunity to gain real-world experience: participate in project work applying new nano-engineering technologies in a workplace environment.

Prerequisite: EE467

EE616 Design Verification with System Verilog (3 units)
This course is designed to cover the design verification methodologies commonly used in system-on-chip (SOC) design. Topics include design verification basics, introduction of various verification strategies, verification of soft and hard IP blocks, verification for networking/communication ASIC, verification for audio/video signal processing ASIC, how to build an efficient and effective verification platform, automation of verification flow, test case coverage, how to create design models using PLI routine, and formal verification, etc. The students will also be informed that design verification is becoming the bottleneck in modern ASIC design cycles, especially in system on chip (SOC) design. The verification cycle could take up to 70% of the design cycle.

Prerequisites: EE461
SCHOOL OF BUSINESS AND INFORMATION TECHNOLOGY

The School of Business and Information Technology offers one degree program at each level: bachelor’s, master’s and doctorate degrees. These are educational programs in the business and organizational disciplines intended to prepare individuals to make sustained contributions to organizations and society in a global, diverse, and dynamic environment, focusing on developing an individual’s interdisciplinary problem solving skills, interpersonal and communication skills, ability to adapt to changing information technology and business environments, entrepreneurial innovations, and ethical and professional values. Successful completion requires an understanding of not only the required business subjects but also modern information systems and internet technology pertinent to e-business applications.

The School Dean, program chairs, advisory committees, as well as the faculty members of the School of Business and Information Technology are responsible for the School’s academic affairs.

To help the students gain real-world experience, an enterprise resource-planning tool, such as SAP software, is integrated into the business curriculum. A number of faculty members will guide the students to practice using SAP software and its applications in an enterprise environment.

Faculty

All the business faculty members possess the following qualities: advanced degrees earned in business disciplines, work experience relevant to their teaching subjects, and enthusiasm in teaching and helping the students. To increase the students’ learning effectiveness, they bring their real-world experience into the classrooms as well as use case studies to stimulate the students’ minds and exemplify various lecture topics.

Objectives

The objectives of the business programs are:

- To prepare students for professional careers in modern-day businesses.
- To equip the students with not only business knowledge but also the ability to make use of the latest information technology in the business environment.
- To provide a simulated enterprise environment as well as professional development opportunities for those who wish to practice the profession of business administration with increased competence.
- The undergraduate program also develops the students’ communication skills, analytical skills, and understanding of organization and cross-culture issues, and increases their awareness of business and social issues for them to be thoroughly grounded in ethical principles.

Undergraduate Program

The School of Business Administration and Information Technology offers an undergraduate degree program: Bachelor of Business Administration and Information Sciences degree (BBAIS).

- Credential Requirements

The undergraduate programs accept qualified high school graduates and college transfer students.

Freshmen Applicants: Undergraduate applicants who have not completed at least 30 semester units of college credit are considered freshmen.

- Application Requirements

To apply for admission into a bachelor’s degree program, the applicant is required to submit the following to the NPU Admissions Office: (1) an Application Form (online or hardcopy), (2) a nonrefundable application fee, (3) official transcripts from previously attended colleges; freshman applicant is required to submit his/her official high school transcript and document certifying high school completion, (4) an English proficiency document is required for non-native English speakers: An official transcript with English course records or TOEFL/IELTS score report or equivalent will suffice. NPU’s English assessment exam, when available, can be taken by the applicant to meet this requirement. See
English Proficiency Requirement below for detailed information on the English entrance requirement, and (5) Entrance assessment tests: SAT-I for freshman applicants. Applicants have the option to take the on-campus equivalent assessment tests. The scores are for reference purpose and will not affect the admission evaluation for the applicants. (6) Resumes are required for applicants interested in applying for scholarships.

- **International Students:** In addition to the above general application requirements, an international applicant is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

**GED:** NPU recognizes the General Educational Development (GED) tests and accepts the GED graduates.

- **English Proficiency Requirement**

Non-native English speakers are considered meeting the entrance English proficiency requirement if they meet any of the following requirements:

- Used English as the official language and completed study in a high school or college degree program,
- Has completed a college English credit course in an English speaking institution,
- Has submitted an official TOEFL or IELTS test score report to NPU and the score meets the entrance English requirement set by the NPU admissions office.

The TOEFL institution code for NPU is 9626.

**Conditional acceptance** may be granted to applicants whose TOEFL/IELTS scores or other equivalent records do not meet the above requirement but have reached intermediate level of the American Language classes (ESL) offered by NPU. These students will be required to enroll in ESL classes until they pass the advanced level ESL classes before enrolling in degree courses.

**NPU’s English Placement Examination (EPE):** An applicant may be offered the option to take NPU’s English Placement Examination in place of the standardized tests. The exam result affects the applicant’s admission status. A fee will be charged for this service.

NPU may accept the English assessment reports from a few U.S. English language institutions recognized by major universities in the U.S.

- **Entrance Assessment Examination**

The entrance assessment test, SAT-I, is required for freshmen only and for reference purpose. The score will not affect admission evaluation for the applicants. Freshman students have the option to take the on-campus equivalent test in place of SAT-I before the new semester starts. The cost for taking the on-campus SAT-I-equivalent assessment test is $50.

**NPU's Institution Code for reporting the SAT scores is 4335.**

Students who are required to enroll in English as a Second Language (ESL) classes will be allowed to take the entrance assessment tests after they have passed the advanced level ESL classes.

- **General Background Requirements for Pursuing the Bachelor’s Degree**

Remedial courses are not offered at NPU except for English as a Second Language classes. Applicants to all programs are required to have completed pre-calculus subjects in algebra, trigonometry, and geometry prior to admission into the program.

- **Transfer of Credit from Other Institutions**

Course credit earned at other institutions of higher education may be transferable. Credit transfer is made by the admission evaluators
while conducting the admission evaluation. The following statements apply to all transfer credits:

- The NPU Admissions Office must receive all official transcripts prior to the student’s joining a degree program. Without preapproval, transcripts received after the student joins NPU cannot be used in transferring credits, except for records from the term immediately preceding the student’s starting semester at NPU.
- The student was officially enrolled in the course.
- When evaluating any foreign transcript, the admission evaluators may accept or transfer credit based on their knowledge of the course contents in comparison with similar courses offered in the U.S.
- Courses for transfer to NPU may not be completed concurrently at another institution while attending NPU.
- College English courses taken at an institution where English is not an official language cannot be transferred for general education credit.
- The total credits transferred from other institutions to meet the student’s program requirements are limited to 80 semester units.
- Credits are transferred by the following conversion:

  - Definition of a Trimester/Semester Unit:
    One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

  - Conversion Factor:
    1 quarter unit = 0.66 trimester/semester unit

  - Grades Required for Transfer Credit
    In the bachelor’s degree program, courses completed with passing grades are transferable in most cases. However, the Admissions Committee has the authority to make the evaluation on an individual basis and make its decision based on its expertise in credential evaluation.

  - Other Types of Undergraduate Transfer Credit

The following other types of credit may be transferable:

- AP course credit earned which is considered to be equivalent to college credit.
- Credit by Examination - CLEP
  NPU grants credit to those students who pass examinations in English, natural sciences, humanities, and social science subjects offered by the College Level Examination Program (CLEP). Only General Education credits will be granted. Students should consult with the Admissions Office for information on acceptable CLEP scores and units. The CLEP Institution Code for NPU is 7569.
- Transfer of Credit from Defense Activity for Nontraditional Education Support (DANTES) and Military Services
  Credits will be allowed for DANTES Subject Standardized Tests and professional military education evaluated by the American Council on Education (ACE). The maximum transferable credits follow the same policies as specified above. NPU’s evaluation of an application is made prior to the student’s admission to a program unless otherwise approved by the authorizing VA office. The DANTES Institution Code for NPU is 9670.

  Proficiency Exams: A student may be required to demonstrate proficiency in a subject taken more than ten years prior to application with NPU by successful completion of a proficiency examination.

- Tuition
  Tuition is charged per unit. Tuition for courses taken to fulfill the undergraduate degree requirement is $330.00 per unit.

  - Tuition per Unit for Courses Audited
    For courses audited (without earning credit), the tuition is half the regular unit rate. Not all courses can be taken with “audit” status.

  - Estimated Semester Cost of Tuition for a Full-Time Student
    The tuition is $4,950 for an undergraduate student taking 15 units per semester.
• Graduation Requirements

The BBAIS degree program requires course work in the following areas:

1. General education,
2. Major study, and
3. Electives.

A minimum of **125 units** are required for graduation. **An overall G.P.A. of 2.0 or better and a D- grade or higher on all courses towards the degree are required for meeting the graduation requirements.** The student must be in good standing with the University and have an approved petition for graduation on file.

1. General Education Requirements

All students must complete at least **39 semester units in general education (GE).** GE courses cover subjects in the following areas: English and communications, humanities, mathematics and natural sciences, and social sciences.

Examples of courses that fall under the general education area are as follows:

A. English and Communications: Expository Writing, Speech, Communication, Composition, Creative Writing.

B. Humanities: Foreign Languages (excluding native language), Philosophy, Music Appreciation, Fine Art, Religion.


2. Major Study Requirements

The BBAIS curriculum aims to provide the student the foundation and training in business management and information technology. Students are encouraged to utilize the enterprise resource-planning and management tool provided by the school to gain hands-on experience in a simulated enterprise environment.

**Professional Development:** The Professional Development course prepares the students for their professional careers.

3. Electives

Electives are built into the program to promote breadth as well as depth in the study program. The student must complete a sufficient number of elective courses to meet the graduation requirements in the program.

The following is the description of the BBAIS degree program with a statement of the program objectives, a suggested GE and lower-division major courses study flow, and the program curriculum.

**Course Numbers:** Courses numbered in the 100s and 200s are **lower-division** courses; courses numbered in the 300s and 400s are **upper-division** courses.
- Bachelor of Business Administration and Information Sciences (BBAIS)

**Objectives:** The program is to prepare students with the fundamentals of current business practices, management principles, and leadership skills, as well as modern information technology applied in a real-world business environment. The training will enable the students to work with computers and information technology to manage business in the information age and in the global business setting. After completing the undergraduate degree, a student is also prepared to enter a graduate degree program in business administration or related fields, including using up-to-date information technology and enterprise resource-planning tools.

**Graduation requirements:** A minimum of 125 units are required for graduation. They include the following:

1. **39 units of general education courses** including 12 units in English and communications, 9 units in humanities, 9 units in mathematics and natural sciences, and 9 units in social sciences,
2. **62 units of major courses,** and
3. **24 units of electives.**

Suggested course sequence in the first four semesters:

**GE and Lower-Division Courses Study Flow**

**BBAIS Curriculum**  
(Total of 125 Units)

1. **General Education (minimum 39 units)**

   The purpose of general education is to give breadth to the student’s education. With a general background in English and communications, humanities, mathematics, natural sciences, and the social sciences, the student will be prepared for his/her roles both in society and at work. Students who have not completed the general education requirements upon entering a degree program at NPU are required to observe the following curriculum to meet the general education requirements.

   (a) **English and Communications** (12 units)  
   (ENGL101 is a required course. Other listed courses are suggested subjects.)

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<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>ENGL101</td>
<td>(3)</td>
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<tr>
<td>ENGL102</td>
<td>(3)</td>
</tr>
<tr>
<td>ENGL115</td>
<td>(3)</td>
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<td>ENGL210</td>
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</table>
(b) **Humanities** (9 units)
   (The following are suggested subjects.)
   
   HU210  Introduction to Philosophy  
   HU240  Music Appreciation  
   HU280  Principles of Ethics

(c) **Mathematics and Natural Sciences** (9 units)
   (MATH208 is a required course. Other listed courses are suggested subjects.)
   
   PHYS101  Introduction to Physical Sciences  
   MATH201  Calculus – I  
   MATH208  Statistics

(d) **Social Sciences** (9 units)
   (The following are suggested subjects.)
   
   SOC201  California History  
   SOC245  Health Psychology  
   SOC275  The American Experience

2. **Major Requirements (minimum 62 units)**
   (Business administration and information technology, a professional development course, a major design experience)
   
   IT200  Introduction to Computers and Digital Media  
   ACC201  Principles of Accounting – I  
   ACC201L  Basic Accounting Lab – I  
   ACC202  Principles of Accounting – II  
   ACC202L  Basic Accounting Lab – II  
   ECON201  Macroeconomics  
   ECON202  Microeconomics  
   FIN310  Fundamentals of Finance  
   IT310  Introduction to Information Technology  
   IT370  Database Design and Development for Business  
   LAW310  Introduction to Business Law  
   MGT310  Principles of Management  
   MKT310  Principles of Marketing  
   ACC490  Introduction to Taxation  
   BUS400  Business Communication  
   BUS445  Professional Development  
   DMG450  Fundamentals of Digital Media and Graphics  
   IT450  Enterprise Information System Fundamentals  
   MGT450  Organizational Behavior and Management  
   MGT460  Production and Operations Management  
   MGT480  Entrepreneurship  
   MKT450  Marketing Management

2. **Electives (minimum 24 units)**

   The student may select courses in any field to fulfill this requirement. Prerequisite requirements must be met when taking any course. The student is encouraged to take SAP lab module courses to gain hands-on experience with a standard enterprise resource planning and management software system. When applicable, the student may take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. The student must
observe the rules required for taking the practicum courses. Students interested in research work may select to enroll in the Senior Project course series and work under the guidance of a project advisor. Detailed course requirements for the Senior Project course series are posted on the Online Service Center.

The student also has the option to select a focused study area and take the suggested courses to gain in-depth knowledge in that area. ACC451L is a hands-on SAP lab course. The following are the available study areas and the suggested courses for each area:

a. Accounting focus: ACC451, ACC451L, ACC452
b. Digital Media and Graphics focus: DMG460, DMG480
Course Descriptions

Bachelor’s Degree Program
School of Business Administration and Information Technology

For the undergraduate program, lower division courses are numbered in the 100s and 200s, and upper division courses are numbered in the 300s and 400s.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
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<tr>
<td>100-199</td>
<td>Freshman level courses</td>
<td>200-299</td>
<td>Sophomore level courses</td>
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<tr>
<td>300-399</td>
<td>Junior level courses</td>
<td>400-499</td>
<td>Senior level courses</td>
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Each course description is followed by its prerequisite information expressed in course numbers.

Each 1-unit lab course requires at least 2 hours of lab work each week. Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

Accounting

ACC201 Principles of Accounting - I (3 units)
This course is the first of a 2-part basic accounting principles series. Topics include an introduction to basic elements of financial accounting, recording and analyzing financial transactions, opening and using accounts of various types, setting up and using a general journal, accounting methods for service businesses, and accounting methods for corporations. Students are required to use popular accounting tools, such as QuickBooks, for homework and exercises. Other PC-based accounting software may also be introduced to the students for practice. Lab work is required.
Prerequisite: IT200

ACC201L Basic Accounting Lab - I (1 unit)
This lab course is designed to be taken concurrently with the course ACC201 Principles of Accounting - I. Topics include an introduction to QuickBooks and using QuickBooks to manage the sales process, tracking revenue, expenses, bank reconciliation, reports and graphs, company file set up, and maintenance. Hands-on practice is required.
Prerequisite: IT200

ACC202 Principles of Accounting - II (3 units)
This course is the second of a 2-part basic accounting principles series. Topics include analysis of accounting information, reporting, cash flows, and financial statements; management accounting and product costing, managerial accounting concepts and principles, manufacturing and job order cost accounting, process cost accounting, cost allocation, performance measurement, cost planning and control, cost-volume-profit analysis, master budgets and planning, and strategic analysis in managerial and cost accounting. Students are required to use popular accounting tools, such as QuickBooks, for homework and exercises. Other PC-based accounting software may also be introduced to the students for practice. Lab work is required.
Prerequisite: ACC201

ACC202L Basic Accounting Lab - II (1 unit)
This lab course is designed to be taken concurrently with the course ACC202 Principles of Accounting - II. Topics include company file setup and maintenance, inventory, sales tax, time and billing, payroll setup, payroll processing, adjustments, and the yearend procedures. Hands-on practice is required.
Prerequisite: ACC201L

ACC450 Managerial Accounting (3 units)
This class applies the essentials of financial accounting to the practice of management. Students will understand cost definitions, cost concepts, cost behavior and cost estimation; also, how cost accounting is applied to manufacturing and service organizations, the principles of planning and control for effective cost-related management, capital budgeting, cash flow statements, and how to analyze financial statements.
Prerequisite: ACC201

ACC451 Intermediate Accounting - I (3 units)
This course is designed for students who are interested in pursuing careers as accounting professionals. This course builds on the knowledge obtained in the Principles of Accounting series. Topics include understanding financial accounting and accounting standards, financial statement preparation, required disclosures, and in-depth study of current assets, revenue recognition and fixed assets.
Prerequisite: ACC202
ACC451L Intermediate Accounting - I SAP Lab (1 unit)
This course is designed for students who are interested in pursuing careers as accounting professionals. This practical lab provides hands-on, step-by-step instructions and real-world examples for the most frequently used FI submodules found in SAP ECC 6.0. The student will be able to apply what he/she has learned to customize his/her system to meet his/her accounting, planning, and reporting needs. In addition, the student will learn skills which he/she will be able to apply to other areas of functionality within the SAP suite. NPU provides educational establishments in the introduction of SAP as well as positions the students for future career enhancement.
Prerequisite: ACC202L

ACC452 Intermediate Accounting - II (3 units)
This course is a continuation of Intermediate Accounting - I. Subject matter includes current and long-term liabilities, stockholders’ equity, investments, pension and post-retirement benefits, leases and cash flow statements.
Prerequisite: ACC451

ACC490 Introduction to Taxation (3 units)
This course covers taxation concepts applied to individual’s income, deductions, credits, property transactions, and tax accounting methods. An understanding of the concepts will enable students to prepare quality individual income tax returns as a professional. The course will also cover taxation rules governing financial planning.
Prerequisite: ACC201

BUS400 Business Communication (3 units)
This course instructs and develops business communication skills that are essential for daily business and professional activities. Topics include professional memo writing, e-mail format and filing, business letters and correspondence, and business reports. Attention will also be devoted to improving students’ active listening, speaking and nonverbal communication skills.
Prerequisite: ENGL101

BUS445 Professional Development (3 units)
This course instructs the student to develop his/her professional career. Topics cover personality assessment, professional ethics, understanding the business professional world, recognizing company culture and organizational structure, how to survive office politics, career paths and pitfalls, resume writing and cover letters, and interview techniques.
Prerequisite: ENGL101

BUS460 Introduction to Business Analytics (2 units)
This course teaches the basics of business analytics. The students learn to use popular data analysis tools to analyze business data for the purpose of understanding business trends, making business forecast, and improving organization’s decision making and business strategies.
Prerequisite: MATH208

BUS460L Introduction to Business Analytics Lab (1 unit)
This course is designed to be taken with the course BUS460 Introduction to Business Analytics. The students gain hands-on experience with business analytics. The students learn to use popular data analysis tools.
Prerequisite: MATH208

Curricular Practicum

CPT401 Curricular Practicum (1 unit)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have completed at least two semesters of coursework required in his/her degree program, obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. The student must use NPU’s online tool to submit his/her application for taking this course before meeting with a designated advisor for an assessment of eligibility. Information and instructions concerning this course are provided in the application form. This is a part-time practicum course taken by the undergraduate student to work no more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.
Prerequisite: Refer to the instructions on the application and agreement documents.

CPT402 Curricular Practicum (2 units)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have completed at least two semesters of coursework required in his/her degree program, obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. The student must use NPU’s online tool to submit his/her application for taking this course before meeting with a designated advisor for an assessment of eligibility. Information and instructions concerning this course are provided in the application form. This is a full-time practicum course taken by the undergraduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards. 

**Prerequisite:** Refer to the instructions on the application and agreement documents.

### Digital Media and Graphics

**DMG450 Fundamentals of Digital Media and Graphics (3 units)**
In many digital graphics design areas, such as typesetting and logo graphics, vector editing provides smooth and flexible sizing. Adobe Illustrator is a vector graphics editor providing results in the typesetting and logo graphic areas of design. Upon completion of this course, the student will be able to use sophisticated Illustrator tools for drawing, painting, editing, and to efficiently produce artwork for print, the web, digital publication, and business applications. The student will also learn to incorporate Photoshop’s products with Illustrator. Advanced level tools for 3D model design, such as AutoDesk, are explored. Hands-on exercises are required. 

**Prerequisite:** IT200

**DMG460 Introduction to Animation (3 units)**
This course focuses on digital animation using Adobe Flash. The student learns to import Photoshop files, build objects with Flash tools, create motion using key frames and tweening with ActionScript. Exploration of other software tools, such as FlipBook, will also be included. Hands-on exercises are required. 

**Prerequisite:** IT200

**DMG480 Introduction to Dreamweaver (3 units)**
This course focuses on developing a website using Adobe Dreamweaver. Topics covered include techniques in using Cascading Style Sheets (CSS), creating headings, lists, and block-quotes, creating tables, inserting an image, linking to internal site pages and other external sites, adding interactivity, creating a page layout, use of forms and Flash files, productivity issues, and publishing on the web. Hands-on exercises are required. 

**Prerequisite:** IT200

### Economics

**ECON201 Macroeconomics (3 units)**
This course teaches economic analysis at the level of the entire economic system or macro perspective. Topics include business cycles, unemployment or lack of demand, inflation, national income and expenditure, aggregate demand and fiscal policy, money and monetary policy, trade and balance of payments deficits, the national debt, productivity and economic growth. 

(Lower Division GE – Social Sciences area for non-business majors) 
**Prerequisite:** ENGL101

**ECON202 Microeconomics (3 units)**
This course studies the economic system from the individual decision-maker’s perspective. Topics include demand analysis, economic analysis of production, industry and competition analysis, market and economic analysis of public policies, and labor markets and income redistribution analysis of public policies. 

(Lower Division GE – Social Sciences area for non-business majors)

**Prerequisite:** ENGL101

### English

(General Education in English and Communication area)

**ENGL101 Expository Writing (3 units)**
This course, while at the fundamental level of college writing, is based on a systematic approach to address students' needs to acquire knowledge and skills in written communication. It covers a full range of basic concerns in writing, going from its processes to its forms, to the popular techniques writers have used to make their works outstanding. With this course, students will learn to write as well as write to learn. By the end of the semester, the students should be able to use grammar and punctuation correctly and to write effective essays in both academic and professional settings. 

**Prerequisite:** ESL401

**ENGL102 Critical Thinking (3 units)**
This course focuses on learning to be an effective provider and consumer of ideas in our information-saturated society. Students will learn to identify the
intent of the message, to judge the soundness of the argument, and to evaluate the validity of the evidence. Rigorous training will help learners go beyond feelings and personal biases to clear, impartial, and accurate problem solving and decision making that are essential to all human communication: speaking, writing, debating, and persuading.

Prerequisite: ENGL101

ENGL115 Public Speaking (3 units)
This course is designed to develop effective skills in extemporaneous speaking, formal presentations, and listening. Students will learn about nonverbal communication, cultural differences in communication, and research methodology.
Prerequisite: ESL401

ENGL210 Intercultural Communication (3 units)
This is a course taught with lecture, readings, discussion, video viewing and guest speakers. It will turn you into a better communicator in an increasingly diversified workforce. With globalization becoming such a universal trend, everyone needs to know how to interact and stay in harmony with people of different cultural, ethnic and linguistic origins. Indeed, how to communicate in a "melting pot" like the U.S.A. today is an urgent concern both in theory and in practice. Much of the tension among countries, races and ethnic groups is caused by a lack of mutual understanding. This course will give you the kind of knowledge needed for this understanding. It will cover many interesting theories that will help you establish and maintain good social and work relationships across the borderlines of cultures and nationalities.
Prerequisite: ENGL101

ENGL220 Small Group Communication (3 units)
This course is designed to accomplish the following learning goals: 1) to help the students understand theories and principles of small group decision making and problem solving, 2) to provide students with hands-on experience working in small groups, the most powerful tool in modern industry, and 3) to offer students opportunities to observe the development and operation of real-life task-oriented groups.
Prerequisite: ENGL101

Finance

FIN310 Fundamentals of Finance (3 units)
This course introduces the student to the world of finance. Financial management is concerned with the efforts of the corporation’s managers to raise and allocate capital in a manner that will maximize and stabilize the firm’s future cash flows. This course examines the concepts and techniques available to financial managers as they address various aspects of the financing and investment questions. Topics include financial background, a review of accounting, financial statements, and taxes; cash flow and financial analysis, the financial system and interest, time value of money, the valuation and characteristics of bonds, the valuation and characteristics of stocks, risk and return, capital budgeting, and international finance. A case study will be applied to assist students’ learning.
Prerequisite: ACC201

FIN450L Financial Management SAP Lab (1 unit)
This course is designed for students who are interested in pursuing careers as accounting professionals. This lab provides hands-on and step-by-step instructions for the students to practice in a SAP environment. Topics focus on how to create cost centers and allocate actual cost and planned cost within different cost centers.
Prerequisite: FIN310

Human Resource Management

HRM452L Human Resource Management SAP Lab (1 unit)
This SAP lab course gives a brief overview of the integrative processes in SAP ERP Human Resource Management. This course is designed to start with a basic overview of the module and end with advanced knowledge of configuration and testing. Students will learn from lab materials and homework assignments to simulate real-life projects. Lab exercises in this class include organizational structure, recruitment and selection, benefits, risk management, compensation management, travel and personnel time management, training and event management, personnel development, and information display and reporting.
Prerequisite: MGT310

Humanities

HU210 Introduction to Philosophy (3 units)
This course is an introduction to the great questions of philosophy, using an historical approach. The class covers Western and non-Western traditions from the pre-Socratic and Confucius to modern times.
Prerequisite: ENGL101

HU230 Art Appreciation (3 units)
A crash course in western art aesthetic from ancient art to post-modernism, this course gives the student a historical western art background that makes comparisons to the East, as well as the tools to analyze paintings through their own cultural point of view.
Prerequisite: ENGL101
HU240 Music Appreciation (3 units)
This course is designed for students to explore the fundamentals of music through easy listening examples from all aspects of sound: tone, color, harmony, rhythm, mood, dynamics, tempo, themes, and forms. Students will analyze music in respect to the historical and cultural context as well as to daily life.
Prerequisite: ESL401

HU250 News Reading (3 units)
This course will give students a skill that they will be able to use and benefit from for the rest of their lives: the ability to read and understand an English-language newspaper, magazine or other journalistic materials. It will enable the students to launch from their general English reading capability into a subject area which is more specialized and yet intimately woven with every-day happenings that concern and motivate every ordinary man and woman -- the news reports.
Prerequisite: ENGL101

HU280 Principles of Ethics (3 units)
This course is designed to teach students ethical principles and problems applicable to their lives. Topics include application of ethical principles, background and philosophical principles of ethics, ethical practices, and practical ethical problems and solutions.
Prerequisite: ENGL101

Information Technology

IT200 Introduction to Computers and Digital Media (3 units)
This is an introductory computer literacy course introducing the students to the basics of computer hardware structure, the World Wide Web, and MS Windows software tools. Topics include an introduction to computer components, input/output, data storage, the Internet and the WWW, operating systems, data management, and a few Adobe Photoshop software tools. Students also learn to use the latest Microsoft Office tools – Word, Excel, Access, PowerPoint, and the use of the internet and browsers. Hands-on exercises are required.
Prerequisite: ESL401

IT310 Introduction to Information Technology (3 units)
This is the first of a sequence of IT courses designed to provide students the fundamental knowledge and training in the following areas: (1) concepts and basic principles of management information systems and current information technology for business, and (2) basic business programming and database concepts. Topics of this course include an introduction to current information technology and a tour of computer systems, the internet, and World Wide Web; electronic spreadsheets, database applications for personal productivity, multimedia presentations, developing single-user systems, fundamentals of programming, multi-user and network computing, shared and distributed data, developing shared IT applications, business information systems and IT in industry, issues in information technology, and the information age: next steps. Students will receive assignments for practice on networked PC systems to learn the covered subjects and programming.
Prerequisite: IT200

IT370 Database Design and Development For Business (3 units)
This is the second of the IT sequence and offers a more in-depth study of database systems. Technical concepts are presented within a managerial context. Students will learn the impact of the database environment on the decision-making process. Topics include introduction to database systems, elements of database systems, data modeling, a framework for database systems design, normalized database design, the relational database model, the structured query language, the technical aspects of database design, and database systems for management decision making. Hands-on exercises and projects are required. SAP R/3 will be used as the live example for an IT system.
Prerequisite: IT310

IT450 Enterprise Information System Fundamentals (3 units)
This course provides a general introduction to information systems for electronic enterprise with emphasis on system functions, deployment planning, integration technologies, and administration basics. Topics include enterprise information system categories, Portals, ERP, CRM, application integration, industry standards, and system platforms. In addition, students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.
Prerequisite: IT310

IT453 Web Site Design and Programming with JavaScript (3 units)
This course teaches the fundamentals of client-side programming for Web pages requiring data collection or other user interaction. Students will create Web pages that execute on the client machine using JavaScript. Students will also learn more details of UNIIX Operating System
Prerequisite: IT310

Law

LAW310 Introduction to Business Law (3 units)
This course is designed as an introductory-level course in U.S. business law. The focus will be on
preparing students to spot potential legal issues in the operation of businesses so they can operate legally and know when to consult an attorney before taking action. The course begins with an overview of the U.S. legal system, its fundamental structures and processes. Emphasis is placed on basic tort and contract law principles. Students will also be exposed to several substantive areas of law affecting business, including employment, environmental, corporate, securities, bankruptcy, intellectual property, and antitrust law.

**Management**

MGT310 Principles of Management (3 units)
This course is designed for students to learn the basic skills, applications, and foundations of management. Specifically, students will learn organizational structure and environment, and develop skills in planning, organizing, leadership, motivation, decision-making, communication, negotiation, and managing information for decision making. This course serves as a foundation for a more in-depth study of various aspects of management in other courses.
Prerequisite: ENGL101

MGT450 Organizational Behavior and Management (3 units)
This course explores the complex dimension of organizational behavior including examination of experiential and conceptual approaches to communication, self-awareness, perception, motivation, problem solving and culture. Students apply interpersonal and intrapersonal exploration to the management of change, leadership theories and organizational issues. Real case projects are required.
Prerequisite: MGT310

MGT453L Project Management SAP Lab (1 unit)
The goal of the Project Management SAP lab is for the student to not only understand the theoretical background of project management but also be able to plan and control a project. The project manager has the task of ensuring that the project is executed as planned.
Prerequisite: MGT450

MGT460 Production and Operations Management (3 units)
New technologies, competition from emerging industrialized nations outside North America, and the productivity and quality demands from the consumers continue to shape production and operations management. This course is designed as an introductory-level course in production and operations management. Emphasis will be on planning, organizing, controlling, and a balance between the quantitative aspects and behavioral applications in production/operations management; operations strategy will be the guide for topical integration. The students will learn management process, resource conversion, and concepts, models, behavior, and behavioral applications within production/operations. Specific topics include operations management, operations strategies for competitive advantage, forecasting in operations, product and process design choices, facility and layout planning, scheduling, inventory control and quality control. The PP, MM, and QM modules of SAP R/3 may be used as demo software.
Prerequisite: MGT310

MKT310 Principles of Marketing (3 units)
This course introduces the major principles of marketing, marketing’s role within the company, and its role in the global economy. Studies will focus on how to find marketing opportunities with market segmentation, how to get information for marketing decisions, the elements of product planning and new product development, wholesalers and retailers and their strategies, pricing, and promotion.
Prerequisite: ENGL101

MKT450 Marketing Management (3 units)
This course studies marketing management by analyzing real-world cases. Students will learn to implement and execute the marketing process through situation assessment, strategy formulation,
Marketing planning, marketing implementation and evaluation.

Prerequisite: MKT310

MKT450L Marketing Management SAP Lab (1 unit)
This course is designed for students who are interested in using the CRM system to understand the concepts of various marketing tools. The course provides hands-on sessions using the SAP ERP SD module and the SAP CRM module, which are tightly integrated with the MM and PP functional modules.

Prerequisite: MKT310

Mathematics

MATH201 Calculus - I (3 units)
This course is the first of a series in calculus designed for students to build up the fundamental background of calculus and to learn its applications to very basic problems. Topics include functions, limits, continuous functions, derivatives and applications, antiderivatives, composite functions and chain rule, graphing techniques using derivatives, implicit differentiation, finite integrals, and fundamental theorems of calculus.

(GE – in Mathematics area)
Prerequisite: Pre-calculus subjects.

MATH208 Statistics (3 units)
This course is designed for students to understand the concepts, theory, and applications of probability and statistics. Topics include permutation, combination, random variables, distribution, means and variance, normal distribution, random sampling, estimation, confidence interval, hypothesis testing, linear correlation and regression.

(GE – in Mathematics area)
Prerequisite: Pre-calculus subjects

Physical Sciences

PHYS101 Introduction to Physical Sciences (3 units)
This is an introductory course to expose the students to physical science subjects including the basics of astronomy, chemistry, earth science, and physics.

(GE – in Sciences area)
Prerequisite: Pre-calculus subjects

Social Science

(SOC201 California History (3 units)
This course is designed to expose the students to the uniqueness of California history and its evolution. Topics include the social, economic, and political development of the “Golden State” over the last three centuries, spanning the Native-American, Spanish, Mexican, and American periods. Lectures, case studies, and field trips for research are the forms of study in this course.

Prerequisite: ENGL101

SOC215 Introduction to Sociology (3 units)
This course provides a study of culture, social organization, and social relations. Additional topics include the major social problems in society, with an emphasis on how those problems are interrelated and the role of society in their creation and perpetuation. Issues and problems related to cross culture and diversity will also be addressed.

Prerequisite: ENGL101

SOC235 Multiculturalism in the United States (3 units)
This course looks into various aspects of multiculturalism in American society, exploring issues related to race, ethnicity, gender, sexual orientation, disability, and other social group identities.

Prerequisite: ENGL101

SOC245 Health Psychology (3 units)
This survey course will ask: What is health, how do you know you are well, when should you seek professional services, where do I find the right doctor, why should I take good care of myself, and whom do I go to and for what? Concepts and facts will be given to understand and apply to: the body and its systems, the brain and the mind, physical diseases, chronic pain, mental illnesses, personality disorders, sleep and relaxation, positive thinking, emotional intelligence, behavioral health, nutrition, exercise, health care treatments, alternative and complementary medicine, medications and adverse side effects, medical specialties, national costs, insurance, programs, aging and longevity, quality of life, dying with dignity, and healthcare providers ethics.

Prerequisite: ENGL101

SOC250 Public Administration (3 units)
This course serves as an introduction to public administration. Early key thinkers in the development of public administration will be examined. During the semester, topics such as public policy formation, public management, human resources, reinvention, privatization, e-Government, public finance, performance measurement, and ethics will be reviewed. Students will become familiar with the primary issues and challenges facing public administrators today.

Prerequisite: ENGL101

SOC260 Civilization and Urbanization (3 units)
This is an introductory course designed to cover the 5,000 year shift from rural to urban throughout the world. The city is civilization’s greatest work of art but has many challenges. The ancient walled cities,
utopian writings, urban theories, religious experiments, English Garden Cities and new towns, American Greenbelt Towns, company towns, flight to the suburbs, Neo-traditional planning, the New Urbanism, and current sustainable development, Smart Growth, to the more recent Greening and Healthy Cities will be described and the actual city and regional planning practices are shown.

Prerequisite: ENGL101

SOC270 Early American History (3 units)
This course is designed to lead the students to examine the early periods of American history that shaped the development of the nation, including America before Columbus, European expansion, the founding era and Revolution, the Constitution and the new republic, and subsequent periods of civic and political growth up to the Civil War.

Prerequisite: ENGL101

SOC275 The American Experience (3 units)
This course is designed to lead the students to examine the 20th century rise of the United States as a modern multiethnic society with emphasis on the socioeconomic and political forces that have shaped its development.

Prerequisite: ENGL101
The School of Business and Information Technology offers one master’s degree program: Master of Business Administration (MBA).

- **Objective**

The objective of the master’s degree programs is to provide advanced training to those who wish to practice their profession with increased competence in the global business industries. The program emphasizes both mastery of subject matter and an understanding of related research and research methodology. This emphasis implies development of the student’s ability to integrate and apply the subject matter.

- **Committee Oversight**

The responsibility for developing, modifying, and maintaining the master’s degree program is performed by the Academic Committee for this School. The Academic Committee is lead by a designated group of members who invite inputs from qualified students, faculty, administrators, employers, as well as the Advisory Committee members to conduct their duties.

- **Credential Requirements**

The master’s degree program applicants must hold a valid bachelor’s degree and meet the minimum grade point average requirement for consideration of acceptance.

- **Application Requirements**

To apply for admission into a master’s degree program, the applicant is required to submit the following to the NPU Admissions Office: (1) an Application Form (online or hardcopy), (2) a nonrefundable application fee, (3) official transcripts from previously attended colleges; (4) a document certifying completion of a bachelor’s degree; a transcript printed with degree completion information will suffice (5) an English proficiency document is required for non-native English speakers: An official transcript with English course records or TOEFL/IELTS score report or equivalent will suffice. NPU’s English assessment exam, when available, can be taken by the applicant to meet this requirement. See English Proficiency Requirement below for detailed information on the English entrance requirement, and (6) Entrance assessment test: GMAT for the MBA degree applicants. Applicants have the option to take the on-campus equivalent assessment test. The scores are for reference purpose and will not affect the admission evaluation for the applicants. (7) Resumes are required for applicants interested in applying for scholarships.

- **International Students**: In addition to the above general application requirements, an international applicant is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

**Veteran Students**: Currently the CSAAVE is the state agency responsible for approving veteran education programs.

- **English Proficiency Requirement**

Non-native English speakers are considered meeting the entrance English proficiency requirement if they meet any of the following requirements:

- Used English as the official language and completed study in a high school or college degree program,
- Has completed a college English credit course in an English speaking institution,
- Has submitted an official TOEFL or IELTS test score report to NPU and the score meets the entrance English requirement set by the NPU admissions office.

The TOEFL institution code for NPU is 9626.

**Conditional acceptance** may be granted to applicants whose TOEFL/IELTS scores or other equivalent records do not meet the above requirement but have reached intermediate level of the American Language classes (ESL) offered by NPU. These students will be required to enroll in ESL classes until they pass the
advanced level ESL classes before enrolling in degree courses.

**NPU’s English Placement Examination (EPE):** An applicant may be offered the option to take NPU’s English Placement Examination in place of the standardized tests. The exam result affects the applicant’s admission status. A fee will be charged for this service.

NPU may accept the English assessment reports from a few U.S. English language institutions recognized by major universities in the U.S.

- **General Background Requirements for Pursuing Master’s Degree**

**Background Preparation:** The background preparation for the master’s degree program is described at the beginning of the program. Background deficiencies are identified in the admission evaluation report received by each applicant. The student is required to clear the deficiencies early in his/her study at NPU.

**How to Clear Deficiencies:** The graduate student may clear each background deficiency by taking and passing the preparatory module course at NPU. The student may earn graduate elective credit when taking mezzanine courses to clear deficiencies at NPU. With advance approval by the Admissions Committee, the student may be allowed to clear a deficiency by taking a proficiency exam on the subject.

Courses taken elsewhere after joining the degree program at NPU will not waive a deficiency requirement. Students may not take the deficiency courses at another institution while attending NPU.

- **Transfer of Credit from Other Institutions**

Graduate course credit earned at other accredited higher education institutions may be transferable to meet the student’s graduation requirements if the courses are closely related to the business management course requirements in the MBA program and the grade earned meets the requirement stated below. Such course credits are considered qualified transfer credits. Credit transfer is made by the admission evaluators while conducting the admission evaluation. The following statements apply to qualified transfer credits:

- The NPU Admissions Office must receive all official transcripts prior to the student’s joining a degree program. Without preapproval, transcripts received after the student joins NPU cannot be used in transferring credits, except for records from the term immediately preceding the student’s starting semester at NPU.
- The student was officially enrolled in the course.
- No more than 9 units of qualified graduate-level course credits may be transferred.
- Courses for transfer to NPU may not be completed concurrently at another institution while attending NPU.
- Credits are transferred by the following conversion:

  - **Definition of a Trimester/Semester Unit:**
    
    One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

  - **Conversion Factor:**
    
    1 quarter unit = 0.66 trimester/semester unit

  - **Grades Required for Transfer Credit**
    
    In the master’s degree program, courses completed with a grade of "B" or better are transferable. Courses completed with a “CREDIT” grade are transferable only if the institution’s grading policy states that “CREDIT” is granted with a letter grade which meets the above condition. This policy must be in writing from the institution (transcript key or letter of verification).

NPU undergraduate students who take graduate level courses for graduate credits at NPU while completing their undergraduate degrees are allowed a maximum of 12 units to be counted towards a graduate degree. These courses may not count towards the undergraduate degree. These students may apply for admission to a master’s degree program at NPU in the last semester of their undergraduate study. They are required to complete their undergraduate study before being officially admitted into a graduate program.

**Proficiency Exams:** A student may be required to demonstrate proficiency in an undergraduate background subject taken more than ten years prior to application with
NPU by successful completion of a proficiency examination.

A student may also select to take proficiency exams to clear his/her background deficiencies in order to satisfy the background preparation required by his/her program. Rules for taking proficiency exams must be observed by the student. Of particular importance is timing for taking each proficiency exam. Clearance of a background subject must be completed early enough to meet two conditions: (1) There must be sufficient time for administrative processing of the exam and (2) Processing of the exam must be completed prior to the student’s registration in any course with the deficiency subject as a prerequisite for the course.

- **Tuition**

Tuition is charged per unit. Tuition for courses taken to fulfill the master’s degree requirement is $450.00 per unit.

- **Tuition per Unit for Courses Audited**

For courses audited (without earning credit), the tuition is half the regular unit rate. Not all courses can be taken with “audit” status.

- **Estimated Semester Cost of Tuition for a Full-Time Student**

The tuition is $4,050 for a master’s degree student taking 9 units per semester

- **Graduation Requirements**

The Master of Business Administration degree program requires a minimum of 36 units of graduate-level courses. Additional coursework may be required for a student whose undergraduate degree program was in a discipline other than that of the master’s degree program. The MBA degree program requires coursework in the following categories:

1. Foundation Requirements,
2. Core Requirements,
3. Electives, and

The following are required for graduation:

- A graduate student admitted with undergraduate deficiencies must clear the deficiencies in the early terms. The student may clear a subject by either taking the course and earning a passing grade or passing a proficiency exam on the subject,
- Maintain a grade of C- or better for all courses taken to clear deficiencies or towards the degree requirements,
- Maintain an overall G.P.A. of 3.0 or better,
- Maintain good standing with the University – with clear financial, library, and other school records,
- The student is approved to graduate after filing a petition for graduation.

- **Capstone Course**

The capstone course is intended to integrate the knowledge and skills that the student has acquired from the courses taken in the program. The capstone course instructor determines the course objectives and scope based on the program curriculum and business trend. With this learning experience, the student is prepared to pursue his/her career in the changing global business arena.

The student shall take the capstone course near the end of his/her program of study.

- **Career Planning**

The students are encouraged to utilize the online eCareer Center and work with the Career Center staff to prepare their resumes and participate in job search activities when they are ready for such a pursuit.

The following is the description of the MBA degree program, with a statement of its objectives, the background preparation required, and the program curriculum.

Course Numbers: Courses numbered as PBUSxx are preparatory module courses to clear undergraduate background deficiencies; courses numbered from 450G to 499G are mezzanine courses; courses numbered in the 500s and above are graduate level courses. Mezzanine and graduate level courses are to meet the graduation requirements.
Objectives: The primary objectives of the MBA degree program are: (1) to provide a knowledge base of interdisciplinary business theories and techniques to the students, (2) to train and to develop students’ practical skills for career development, and (3) to develop the students’ decision-making and leadership capabilities to face the challenges of a dynamic business world staged with diverse, multicultural, and global business settings. The emphases are in the fields of modern global business management and digital enterprise system management. Specific studies cover the fields of accounting, financial management, project management, modern information management systems, and business marketing.

Background Preparation

Students admitted into the MBA degree program are required to have proper business background preparation for taking the graduate level coursework. A student with any background deficiency is required to take the specifically designed business preparatory model course to clear it. The student must clear prerequisites before taking the degree required courses. In addition, English proficiency is also required. Refer to the section on “English Proficiency Requirement” in the chapter “Admission Policies” for details.

The following are the business preparatory module courses covering the required background subjects:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBUS05</td>
<td>Essentials of U.S. Corporate Business Management</td>
</tr>
<tr>
<td>PBUS06</td>
<td>Essentials of U.S. Corporate Accounting and Finance</td>
</tr>
</tbody>
</table>

Upon clearing background preparation work, the student starts to take courses to meet the degree requirements.

Mezzanine Courses: A number of mezzanine courses are also required for background preparation. These mezzanine courses are designed for the MBA students to receive hands-on training using popular business tools as well as gain understanding of US corporate culture and professionalism. Credits earned from these mezzanine courses taken at NPU meet the Electives requirement in the MBA program. Students who have earned a business degree from an accredited US university/college may request for a waiver of subjects having been taken at the other university/college. The mezzanine courses are: BUS460G, BUS460LG, FIN450LG, MGT460LG, and P450G.

MBA Curriculum

A minimum of 36 semester units of graduate study are required for the MBA program. The MBA curriculum includes coursework in the following categories: Foundation Requirements, Core Requirements, Electives, and a Capstone Course. A number of concentration areas are shown in the section of Core Requirements; each is listed with a cluster of courses. Students taking courses in a concentration area will gain in-depth knowledge and skills in the corresponding business professional field. Additionally, taking courses in a concentration area can be beneficial to the student for career planning. The student must meet prerequisite requirements when taking any course.

I. Foundation Requirements (9 units)

The following required courses provide a knowledge base of interdisciplinary business theories and techniques.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN501</td>
<td>Financial Management</td>
</tr>
<tr>
<td>HRM531</td>
<td>Human Resource Management</td>
</tr>
<tr>
<td>MGT530</td>
<td>Logistics and Operations Management</td>
</tr>
</tbody>
</table>

II. Core Requirements (12 units)
Beyond Foundation Requirements, the student is required to take at least 12 units of business administration coursework. Although not required, the student has the opportunity to select a concentration area and take courses in the chosen area to meet the core requirements. Taking sufficient number of courses in a concentration area is beneficial to the student for entering the corresponding business profession.

Examples of cluster courses in each concentration area are listed below:

- **Accounting**: ACC501, ACC512, ACC530, ACC540
- **Finance**: FIN510, FIN512, FIN522, FIN568, FIN580, FIN585
- **Information Management**: IT510, IT553, IT560, IT589
- **Project Management**: MGT500, MGT501, MGT505, MGT542, MGT550
- **Marketing**: MKT541, MKT542, MKT545, GBM510

Notices: Prerequisites for the Accounting concentration are: ACC202, ACC202L, ACC451G. Prerequisite for the Information Management concentration is IT450G, IT453G. Prerequisite for the Marketing concentration is MKT450G.

### III. Electives (12 units)

The student may elect any graduate-level courses (courses numbered 4xxG, 5xx, and higher level courses) to meet the Electives requirement. Required mezzanine courses taken at NPU satisfy the Electives requirement in this program. Credits earned from taking courses ACC451G, ACC452G, IT450G, IT453G, or MKT450G at NPU to meet the prerequisite requirements for core courses listed above also meet the Electives requirement.

**Curricular Practicum**: When applicable, the student may take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s course of study. The student must observe the rules required for taking the practicum courses. No more than 6 units of practicum coursework may be counted towards graduation.

### IV. Capstone Course (3 units)

(A required subject)

Upon completing all or most coursework for this program, the student is required to take the capstone course and, under the guidance of the course instructor, integrate the knowledge and skills learned from all of the courses taken during the program.

**MBA595**  Business Administration Capstone Course
Course Descriptions
Master of Business Administration Degree Program
School of Business Administration and Information Technology

Master’s degree courses are numbered in the 500s. The MBA degree program allows for a limited number of credits for 400 level courses with a “G” suffix.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>450G-490G</td>
<td>Mezzanine courses for graduates</td>
</tr>
<tr>
<td>500-699</td>
<td>Graduate level courses</td>
</tr>
</tbody>
</table>

For information on prerequisite subjects numbered below 450, refer to the section on Course Descriptions for the Bachelor’s Degree Program, School of Business and Information Technology.

Courses are listed by subject: Accounting, Business (general courses), Curricular Practicum, Finance, Green Business Management, Human Resource Management, Information Technology, Law; exclusive MBA courses, Management, Marketing. The course lists are followed by a list of preparatory module courses for business graduate programs and a list of online courses.

Each course description is followed by its prerequisite information expressed in course numbers.

Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

ACC450G Managerial Accounting (3 units)
This class applies the essentials of financial accounting to the practice of management. Students will understand cost definitions, cost concepts, cost behavior and cost estimation; also, how cost accounting is applied to manufacturing and service organizations, the principles of planning and control for effective cost-related management, capital budgeting, cash flow statements, and how to analyze financial statements.
Prerequisite: PBUS06

ACC451G Intermediate Accounting - I (3 units)
This course is designed for students who are interested in pursuing careers as accounting professionals. This course builds on the knowledge obtained in the Principles of Accounting series. Topics include understanding financial accounting and accounting standards, financial statement preparation, required disclosures, and in-depth study of current assets, revenue recognition and fixed assets.
Prerequisite: ACC202

ACC451LG Intermediate Accounting - I SAP Lab (1 unit)
This course is designed for students who are interested in pursuing careers as accounting professionals. This practical lab provides hands-on, step-by-step instructions and real-world examples for the most frequently used FI submodules found in SAP ECC 6.0. The student will be able to apply what he/she has learned to customize his/her system to meet his/her accounting, planning, and reporting needs. In addition, the student will learn skills which he/she will be able to apply to other areas of functionality within the SAP suite. NPU provides educational establishments in the introduction of SAP as well as positions the students for future career enhancement.
Prerequisite: ACC202L

ACC452G Intermediate Accounting - II (3 units)
This course is a continuation of Intermediate Accounting - I. Subject matter includes current and long-term liabilities, stockholders’ equity, investments, pension and post-retirement benefits, leases and cash flow statements.
Prerequisite: ACC451

ACC490G Introduction to Taxation (3 units)
This course covers taxation concepts applied to individual’s income, deductions, credits, property transactions, and tax accounting methods. An understanding of the concepts will enable students to prepare quality individual income tax returns as a professional. The course will also cover taxation rules governing financial planning.
Prerequisite: PBUS06

ACC501 Advanced Accounting (3 units)
This course is designed for accounting track graduate students who want to have a complete understanding of the concept of consolidation requirements, consolidated financial statements, and accounting techniques relating
to particular types of business and non-business entities. The student will also explore various tax aspects of consolidated financial statements and participate in case studies. 

Prerequisite: ACC451

ACC512 Federal Taxation of Business Enterprises (3 units)  
This course is designed to give students an understanding of the concepts of federal taxation of corporations, partnerships, estates and trusts. An understanding of the concepts will enable students to prepare corporation and partnership tax returns in a professional environment. Also covered are rules governing estates and trusts. 

Prerequisite: ACC451

ACC530 Auditing (3 units)  
In this course, students learn auditing techniques with an emphasis on the Electronic Data Processing environment, audit procedures, practice and programs; working paper preparation and report writing. The students will experience using electronic auditing software to work on their homework and projects. 

Prerequisite: ACC451

ACC540 Accounting Information Systems (3 units)  
This course provides a conceptual framework for contemporary accounting information systems and accounting cycles. It covers database concepts, internal control, transaction cycle and business process, expenditure cycle, conversion cycle, general ledger, and enterprise resource-planning systems. Students may be introduced to SAP R/3 for data manipulation and report generation. 

Prerequisite: ACC451

Business (general courses)

BUS460G Introduction to Business Analytics (2 units)  
This course teaches the basics of business analytics. The students learn to use popular data analysis tools to analyze business data for the purpose of understanding business trends, making business forecast, and improving organization’s decision making and business strategies.

BUS460L Introduction to Business Analytics Lab (1 unit)  
This course is designed to be taken with the course BUS460 Introduction to Business Analytics. The students gain hands-on experience with business analytics. The students learn to use popular data analysis tools.

BUS501 Quantitative Methods for Business (3 units)  
This course is designed to introduce students to contemporary business decision-making methodologies and develop the students’ ability to analyze complex systems. Quantitative methods of management science and operations research using quantitative analysis are the focus of this course. The students learn to evaluate models from real-world examples as well as techniques to analyze and solve the problems. Students also learn to use quantitative analysis software, critically evaluate the results, and perform sensitivity analysis. 

Prerequisite: BUS460

BUS589 Special Topics (3 units)  
Special topics courses are offered to graduate students in business administration programs by current faculty members or invited guest speakers to expose the students to special topics related to their studies. These courses are conducted the same way as regular courses. 

Prerequisite: subject dependent

Curricular Practicum

CPT501 Curricular Practicum (1 unit)  
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and instructions concerning this course are provided in the online application form. This is a part-time practicum course taken by the graduate student to work no more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards. 

Prerequisite: Refer to the instructions on the application and agreement documents.

CPT502 Curricular Practicum (2 units)  
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement.
Enforcement. Information and instructions concerning this course are provided in the online application form. This is a full-time practicum course taken by the graduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.

Prerequisite: Refer to the instructions on the application and agreement documents.

Finance

FIN450LG Financial Management SAP Lab (1 unit)
This course is designed for students who are interested in pursuing careers as accounting professionals. This lab provides hands-on and step-by-step instructions for the students to practice in a SAP environment. Topics focus on how to create cost centers and allocate actual cost and planned cost within different cost centers.

Prerequisite: PBUS06

FIN501 Financial Management (3 units)
This course is designed to further introduce modern financial theories, tools, and methods used for the analysis of financial problems. The point of view of corporate financial managers will be taken to interact with efficient capital markets. Therefore, while making the best use of constrained resources is necessary, maximizing shareholders’ equity is also vitally important. The primary focus is on analysis and forecast of internal operations and the use of short-term and long-term capital.

Prerequisite: PBUS06

FIN510 Investment Analysis (3 units)
This course covers the foundations of investment management. Topics include theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies.

Prerequisite: FIN501

FIN512 Financial Risk Management (3 units)
This course is designed to further introduce modern financial theories, tools, and methods in dealing with financial risks. Financial risk management has become an extremely important discipline for corporations, financial institutions, and many government enterprises, particularly in challenging economical times.

Prerequisite: FIN501

FIN522 International Trade and Investment (3 units)
This course covers the theories of international trade, through comparative advantage and related corporate strategies, the impacts of emerging regional economic blocks, the institutions of the multilateral trading system, and trade barriers. Students will learn the mechanics of international payment, shipping, and distribution.

Prerequisite: FIN501

FIN568 Corporate Finance (3 units)
This course belongs to the accounting/finance concentration area of study. The first part of the course covers essential corporate finance subjects including executive compensation, corporate governance, and bankruptcy law. Lectures, discussions, and case studies will be the form used for this part of study. The second part of the course consists of discussions of corporate financing such as mergers, acquisitions, valuations; corporate restructuring, LBOs', MBOs', and merchant banking.

Prerequisite: FIN501

FIN580 Portfolio Management (3 units)
This course teaches advanced portfolio decision making. Topics include index models, portfolio performance measures, bond portfolio management and interest immunization, stock market anomalies and market efficiency.

Prerequisite: FIN501

FIN585 International Finance (3 units)
This course prepares the students for a career in international finance. The course discusses the financial environment in which the multinational firm and its managers must function. The course focuses on foreign exchange management and financial management in a multinational firm. It points out to the students the basic principles of profit-seeking and risk avoidance practices in the volatile global financial markets.

Prerequisite: FIN501

Green Business Management

GBM500 Green Business Management (3 units)
This course aims to provide the student an understanding of the mounting demand for business management practices to create not just financial value but to effectively respond as well to the environmental sustainability and social responsibility concerns of society. It will provide the student familiarity of the “best practices” of businesses in responding to this demand to create “sustainable value” and an understanding of the basic principles behind these practices. The course will also develop in the student an appreciation and a sense of commitment to practice “greener” business management practices in their future professional careers.

Prerequisite: PBUS05

GBM505 Green Economics and Policy (3 units)
Green economics represents a transdisciplinary attempt to integrate the social sciences (primarily economics) with the natural sciences (primarily ecology). This course is designed to re-orient the resource allocation decisions of managers in a way that the decision outcome criterion is not simply economic efficiency but sustainability. More specifically, the course seeks to teach students the principles of resource allocation that achieve economic, ecological and social sustainability.
Human Resource Management

HRM452LG Human Resource Management SAP Lab (1 unit)
This SAP lab course gives a brief overview of the integrative processes in SAP ERP Human Resource Management. This course is designed to start with a basic overview of the module and end with advanced knowledge of configuration and testing. Students will learn from lab materials and homework assignments to simulate real-life projects. Lab exercises in this class include organizational structure, recruitment and selection, benefits, risk management, compensation management, travel and personnel time management, training and event management, personnel development, and information display and reporting.

Prerequisite: GBM500

HRM531 Human Resource Management (3 units)
This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating, and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.

Prerequisite: PBUS05

HRM603 Strategic Workforce Planning (3 units)
This course begins with the discussion of the need for manpower planning and gives samples of plans developed for various types of organizations such as manufacturing, high-tech, small business, etc. This course would give students an opportunity to learn about and develop a manpower plan which is part of the business plan and also an ongoing dynamic document developed as a part of the strategic planning component of the organization. It also has to do with scheduling, rosters and succession planning which is a process of identifying a long-term plan for the orderly replacement of key employees. The course also explores cases of developing a manpower plan including developing a Gap Analysis to determine manpower needs and budgeting for the manpower needs. Developing new HR manpower configurations such as self-managed teams, telecommuting, outsourcing, temps-to-hire and other methods to make companies more flexible and offer economical solutions to the high cost of knowledge workers. The course includes case studies and actual writing of several manpower plans for various sizes of organizations.

Prerequisite: HRM531

Information Technology

IT450G Enterprise Information System Fundamentals (3 units)
This course provides a general introduction to information systems for electronic enterprise with emphasis on system functions, deployment planning, integration technologies, and administration basics. Topics include enterprise information system categories, Portals, ERP, CRM, application integration, industry standards, and system platforms. In addition, students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.

Prerequisite: PBUS05

IT453G Web Site Design and Programming with JavaScript (3 units)
This course teaches the fundamentals of client-side programming for Web pages requiring data Collection or other user interaction. Students will create Web pages that execute on the client machine using JavaScript. Students will also learn more details of UNIX Operating System.

Prerequisite: PBUS05

IT501 Advanced e-Business Programming and Design (3 units)
This course is designed for the students to learn details of Perl and CGI programming and applications. Topics include client/server concept, Perl programming, mechanism of CGI, Apache web server, and creating CGI applications with Perl, HTML, JavaScript, and

While economic efficiency is still a paramount decision objective, it should be pursued after measures are taken to guarantee that human activities do not threaten the viability of life on our planet and that all people can secure and produce the means for leading healthy lives (guarantee of basic human rights). The sustainability problems of unregulated markets are also examined.

Prerequisite: GBM500

GBM510 Green Business Marketing (3 units)
In this emerging green era, green business marketing faces unique challenges. On the one hand, it involves dealing with a major trend without formulated requirements; on the other hand, it faces a rapidly growing number of conscious green consumers demanding green business practices. As a result, new marketing strategies, vehicles, and tools are needed by businesses. In this course the students learn to develop marketing plans and business practices that seek a balance among economy and environment, as well as social responsibilities. Case studies and group projects will be conducted as part of the coursework requirements.

Prerequisite: GBM500

GBM530 Human Resource Management (3 units)
This SAP lab course gives a brief overview of the module and end with advanced knowledge of configuration and testing. Students will also learn more details of UNIX Operating System. Students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.

Prerequisite: PBUS05

GBM531 Human Resource Management (3 units)
This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating, and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.

Prerequisite: PBUS05

GBM540 Human Resource Management (3 units)
This SAP lab course gives a brief overview of the integrative processes in SAP ERP Human Resource Management. This course is designed to start with a basic overview of the module and end with advanced knowledge of configuration and testing. Students will learn from lab materials and homework assignments to simulate real-life projects. Lab exercises in this class include organizational structure, recruitment and selection, benefits, risk management, compensation management, travel and personnel time management, training and event management, personnel development, and information display and reporting.

Prerequisite: GBM500

GBM541 Human Resource Management (3 units)
This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating, and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.

Prerequisite: PBUS05
MBA

MBA595 Business Administration Capstone Course (3 units)
The capstone course is intended to integrate the knowledge and hands-on experience that the student has acquired from the foundation, concentration, and elective coursework required for the program in the course under the guidance of the course instructor. The instructor determines the course objectives and scope based on the business curriculum and trends. The instructor guides the students to develop their integration ability. The student shall take the capstone course near the end of his/her program of study.

Prerequisite: MGT530

Management

MGT450G Organizational Behavior and Management (3 units)
This course explores the complex dimension of organizational behavior including examination of experiential and conceptual approaches to communication, self-awareness, perception, motivation, problem solving and culture. Students apply interpersonal and intrapersonal exploration to the management of change, leadership theories and organizational issues. Real case projects are required.

Prerequisite: PBUS05

MGT453LG Project Management SAP Lab (1 unit)
The goal of the Project Management SAP lab is for the student to not only understand the theoretical background of project management but also be able to plan and control a project. The project manager has the task of ensuring that the project is executed as planned.

Prerequisite: MGT450

MGT460G Production and Operations Management (3 units)
New technologies, competition from emerging industrialized nations outside North America, and the productivity and quality demands from the consumers continue to shape production and operations management. This course is designed as an introductory-level course in production and operations management. Emphases will be on planning, organizing, controlling, and a balance between the quantitative aspects and behavioral applications in production/operations management; operations strategy will be the guide for topical integration. The students will learn management process, resource conversion, and concepts, models, behavior, and behavioral applications within production/operations. Specific topics include operations management, operations strategies for competitive advantage, forecasting in operations, product and process design choices, facility and layout planning, scheduling, inventory control and quality control. The
MGT505 Advanced Project Management (3 units)
This course is designed for the graduate students who choose to pursue a career in project management and wish to become an effective project leader. The course covers the following topics: human factors, leadership, team development, customer negotiation, contract negotiation, procurement management, as well as advanced techniques in project management. The students also learn to use tools for project planning, control, and implementation. Independent research and/or small-group projects will be required.
Prerequisite: BUS460

MGT460 Production and Operations Management (1 unit)
The Production and Operations Management course aims to help students learn the general configuration methods for the SAP production module. Topics include SAP history and environment, demand management, manufacturing planning and execution, manufacturing planning cycle, lead time, sales and operations planning, material requirements planning, and capacity management.
Prerequisite: BUS460

MGT480G Entrepreneurship (3 units)
This course explores the full range of the entrepreneurial process including the evaluation, development, and creation of a successful business. It will help the potential entrepreneurs and professionals visualize and experience entrepreneurial development. The course explores the entrepreneurial approach to resources such as the development of an organizational structure, market analysis, financing entrepreneurial ventures, and screening venture opportunities. Individuals will experiment and evaluate what it takes to be an entrepreneur including developing the plan for a new business.
Prerequisite: BUS460

MGT500 Risk Management (3 units)
This course is designed to teach the students risk management concepts, process, strategy making and implementation in a corporate environment. Topics covered include the nature and concept of risks, risk management structure and process flow, information and gathering techniques, data analysis methodology and tools, and risk management techniques. Case studies and a project are required.
Prerequisite: BUS460

MGT501 Project Management (3 units)
This course introduces the principles of project and program management, the roles of project management, matrix organization in both private and public segments, and project management techniques leading to the efficient execution and completion of projects. Proposal development, case studies, and independent projects are required.
Prerequisite: BUS460

MGT505 Advanced Project Management (3 units)
This course is designed for the graduate students who choose to pursue a career in project management and wish to become an effective project leader. The course covers the following topics: human factors, leadership, team development, customer negotiation, contract negotiation, procurement management, as well as advanced techniques in project management. The students also learn to use tools for project planning, control, and implementation. Independent research and/or small-group projects will be required.
Prerequisite: BUS460

MGT530 Logistics and Operations Management (3 units)
This course is designed to prepare students with the ability in logistics and operations management. Topics include how managers plan and control operations to achieve optimum productivity, top quality, and customer satisfaction, qualitative and quantitative methods of managing production and operations, methods of total quality management (TQM) and continuous improvement in the service industries and in production operations. Students will also learn to plan for and operate under changing technologies in international operations and in integrated operations. The instructor may demonstrate SAP R/3 operations module.
Prerequisite: BUS460

MGT538 International Business Management (3 units)
This class reviews the classic five functions of management: planning, organizing, staffing, leading, and controlling. Students will compare managerial practices of Europe, Asia, and Latin America. The class also covers the importance of quality and continuous improvement for gaining a competitive edge. Students will learn practical aspects of management from actual case studies, the strategic considerations for management in the international environment, and the roles of the latest information technologies, including computer networks, telecommuting, decision support systems, and CAD, CAM, CAE.
Prerequisite: MGT450

MGT540 Management of Innovation (3 units)
This course is designed to equip the students with the knowledge and management skills to address the needs of new and innovative enterprises in a changing and uncertain environment. Topics include technology forecasting and assessment, program or product selection and control, market development, financial management, and regulations and ethics.
Prerequisite: BUS460

MGT542 Technology and Product Management (3 units)
This course is designed to give students a practical experience in product development, and focuses on the management of engineering and technology activities. Topics include technology product design, planning, production, marketing, sales, and maintenance; technological product life cycle from research and development through new product introduction, marketing requirement documentation (MRD), product positioning, channel inventory management, outbound communications, and the organizational role of the product marketing manager. Case studies and project presentations are required.
Prerequisite: BUS460
MGT550 Global Outsourcing Project Management (3 units)
Global outsourcing management is becoming one of the most important new management fields in this highly competitive 21st century global economy. In this course the students will learn the important issues related to global outsourcing management as well as the actual implementation mechanism for a successful global outsourcing management business. Throughout the course, cross-cultural and cross-border considerations and diversity management skills will be heavily emphasized. Case studies will be made on successful and failed global outsourcing projects or businesses. It will be easy for the students to connect to this subject due to Silicon Valley's business climate.
Prerequisite: BUS460

MKT545 Global Trade and Operations (3 units)
The course is designed to develop the knowledge and understanding of the global marketing environment and of the concepts, tools, and theory that will prepare the students to take the responsibility for successful global market penetration for his/her business organization. The perspective of the course is managerial, i.e., the ability to identify opportunity, resolve problems, and implement solutions and programs.
Prerequisite: MKT450

MKT450G Marketing Management (3 units)
This course studies marketing management by analyzing real-world cases. Students will learn to implement and execute the marketing process through situation assessment, strategy formulation, marketing planning, marketing implementation and evaluation.
Prerequisite: PBUS05

Preparatory Module Courses for Business Graduate Students (Non-credit)

PBUS05 Essentials of Corporate Business Management (3 hr/wk)
This course is an overview of current business management theories and techniques, the organizational environment and related issues, economics factors affecting business decision making, marketing’s role in the company as well as in global economy. Students are required to explore, discuss, and debate the current business practices and ethics.
Prerequisite: ESL401

PBUS06 Essentials of Corporate Accounting and Finance (3 hr/wk)
This is an introductory level course in corporate finance and basic accounting principles. Various topics will be covered such as the basic elements of financial accounting, accounting system and laws regulating the corporate accounting practices, recording and analysis of financial transactions, internal control and cash, accounting principles, the efforts of the corporation's managers to raise and allocate capital in a manner that will maximize and stabilize the firm's future cash flows. The student will also examine the concepts and techniques available to financial managers.
Prerequisite: ESL401

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Online Courses

The following courses may be offered periodically with an online mode of instruction. Refer to the section on “Taking Online Courses” on page 16 for instructions for taking online courses.

FIN501-ON Financial Management (3 units)
This course is designed to further introduce modern financial theories, tools, and methods used for the analysis of financial problems. The point of view of corporate financial managers will be taken to interact with efficient capital markets. Therefore, while making the best use of constrained resources is necessary, maximizing shareholders’ equity is also vitally important. The primary focus is on analysis and forecast of internal operations and the use of short-term and long-term capital.
Prerequisite: PBUS05

GBM500-ON Green Business Management (3 units)
This course aims to provide the student an understanding of the mounting demand for business management practices to create not just financial value but to effectively respond as well to the environmental sustainability and social responsibility concerns of society. It will provide the student familiarity with the “best practices” of businesses in responding to this demand to create “sustainable value” and an understanding of the basic principles behind these practices. The course will also develop in the student an appreciation and a sense of commitment to practice “greener” business management practices in their future professional careers.
Prerequisite: PBUS05

HRM531-ON Human Resources Management (3 units)
This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.
Prerequisite: PBUS05

IT450G-ON Enterprise Information System Fundamentals (3 units)
This course provides a general introduction to information systems for electronic enterprise with emphasis on system functions, deployment planning, integration technologies, and administration basics. Topics include enterprise information system categories, Portals, ERP, CRM, application integration, industry standards, and system platforms. In addition, students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.
Prerequisite: PBUS05

MGT450G-ON Organizational Behavior and Management (3 units)
This course explores the complex dimension of organizational behavior including examination of experiential and conceptual approaches to communication, self-awareness, perception, motivation, problem solving and culture. Students apply interpersonal and intrapersonal exploration to management of change, leadership theories and organizational issues. Real case projects are required.
Prerequisite: PBUS05

MGT460G-ON Production and Operations Management (3 units)
New technologies, competition from emerging industrialized nations outside North America, and the productivity and quality demands from the consumers continue to shape production and operations management. This course is designed as an introductory-level course in production and operations management. Emphases will be on planning, organizing, controlling, and a balance between the quantitative aspects and behavioral applications in production/operations management; operations strategy will be the guide for topical integration. The students will learn management process, resource conversion, and concepts, models, behavior, and behavioral applications within production/operations. Specific topics include operations management, operations strategies for competitive advantage, forecasting in operations, product and process design choices, facility and layout planning, scheduling, inventory control and quality control. The PP, MM, and QM modules of SAP R/3 may be used as demo software.
Prerequisite: PBUS05

MGT501-ON Project Management (3 units)
This is the first of a sequence of courses designed for graduate students who are interested in pursuing the project management concentration area of study. Principles of project and program management will be introduced, followed by the roles of project management, matrix organization in both private and public segments, and project management techniques leading to the efficient execution and completion of projects. Students also learn to identify and analyze project risks, plan for risk reduction or elimination, control of risk-related factors, and to manage projects under risk conditions. These techniques are useful in project proposal development, in project planning, and in project operational management. Methods for ongoing risk assessment and project performance evaluation are included. Proposal development, case studies, and independent projects are required.
Prerequisite: BUS460
MGT530-ON Logistics and Operations
Management (3 units)
This course is designed to prepare students with the ability in logistics and operations management. Topics include how managers plan and control operations to achieve optimum productivity, top quality, and customer satisfaction, qualitative and quantitative methods of managing production and operations, methods of total quality management (TQM) and continuous improvement in the service industries and in production operations. Students will also learn to plan for and operate under changing technologies in international operations and in integrated operations. The instructor may demonstrate SAP R/3 operations module.
Prerequisite: PBUS05

MGT542-ON Technology and Product Management (3 units)
This course is designed to give students a practical experience in product development, and focuses on the management of engineering and technology activities. Topics include technology product design, planning, production, marketing, sales, and maintenance; technological product life cycle from research and development through new product introduction, marketing requirement documentation (MRD), product positioning, channel inventory management, outbound communications, and the organizational role of the product marketing manager. Case studies and project presentations are required.
Prerequisite: BUS460

MKT541-ON Strategic Marketing (3 units)
This course will teach the students fundamental concepts and practices in marketing research and marketing data analysis, and use of the data and financial analysis to set strategic positioning strategies. Emphasis will be on practical marketing research skills development and basic analysis mechanisms leading to strategic marketing. Students will learn both the primary source (such as surveys) as well as secondary sources (internet, publications, etc.) in research techniques. Students will also engage in their own marketing research projects. Although statistical analysis will be covered in the course, quantitative analysis skills will be the main focus. The course also covers an overview of quantitative and qualitative tools for strategic marketing, the market segmentation process, strategic positioning, and channel marketing issues. Case studies and marketing requirements reports are required.
Prerequisite: MKT450
Doctorate Degree Program

The School of Business and Information Technology offers one professionally-oriented doctorate degree program: Doctor of Business Administration (DBA)

The doctorate degree program is designed for the students to attain specialized and practical competence in their field of studies and in the workplace. The DBA program is offered with the emphasis on practical and real-world applications in both the coursework and the doctoral dissertation requirements.

- Objectives

The doctorate degree program in business administration emphasizes both mastery of subject matter as well as an understanding of related research and research methodology for professional-oriented projects/dissertations. The program aims to develop the student’s ability to integrate knowledge and apply practical research to address problems and issues in the workplace. It is designed for the student to accomplish specified goals and objectives and contribute to competence in the subject area or profession at an advanced level.

- Doctoral Program Committee

The DBA program is governed by its Doctoral Program Committee. The committee is responsible for developing, modifying, and maintaining the doctorate degree program. Committee members include qualified NPU faculty and administrators as well as other qualified professionals or practitioners. The committee is knowledgeable in methods of research and in the subject matter, chaired by a credentialed individual with expertise in the program area. The doctoral students work with the committee members to pursue their doctoral studies.

The doctorate degree program also receives advice and guidance from its Advisory Committee comprised of members from similar accredited doctoral programs and past or future employers of the graduates.

- Accreditation for DBA

Northwestern Polytechnic University is accredited by the Accrediting Council for Independent Colleges and Schools (ACICS) to award doctorate degrees. The current scope of recognition for ACICS, as approved by the U.S. Department of Education and the Council for Higher Education Accreditation, includes diploma programs and degree programs through the Master’s degree. Therefore, accreditation of a doctoral program by ACICS does not make the program eligible for purposes of participation in federal student aid programs, as described in Title IV of the HEA. NPU may confer only professionally-oriented doctorate degrees. Unlike academic doctoral degrees that prepare students to work in academia or research, professional doctoral degrees are designed to make students experts in their fields and in the workplace. As such, the outcomes for those earning a professional doctoral degree involve using knowledge and techniques to purposefully address problems and opportunities in their workplace.

- Applicant Qualifications

1. Earned a master’s degree with a cumulative GPA of 3.0 or above from an institution accredited by an agency recognized by the U.S. Department of Education; a previous degree and work experience in a related field are preferred.
2. Strong interest in advanced study in the chosen subject area,
3. Independent research ability,
4. English proficiency,
5. Students with no or little experience in the work environment they will be prepared to enter will be required to conduct curricular practicum before graduation.

- Application Material

1. A completed application form for the doctorate degree program (online application is available),
2. Application fee,
3. Official transcripts from all colleges and universities attended and certified degree document(s). All official transcripts must be received before the admission evaluation. Applicants enrolled in courses at another institution at the time of application will have 60 days after the completion of the courses to provide the updated transcript. Any other transcripts submitted after the admission evaluation will not be accepted. Failure to observe this requirement will result in placement of the student in a non-degree status.
4. English Requirement:
   (a) International students (holding F1 status) should have English skills to effectively communicate with faculty, staff, and other students. A TOEFL score of 550 on paper-based test, or 213 on computer-based test, or
79 on internet-based test, or an IELTS score of 6.5 is required to enter a doctorate degree program.

(b) Non-international students (with non-F1 status) whose native language is English or who used English as the official language in their undergraduate studies are considered meeting the English entrance requirement. Others follow the same requirements as that for international students described in (a). Those who are in the U.S. at the time of application for admission have the option to take the on-campus English Placement exam (EPE) in place of TOEFL/IELTS before admission evaluation will be made for them. The EPE passing score for the doctoral program applicants is higher than that for the other applicants.

5. Entrance Exam: Applicants to the Doctor of Business Administration degree program are required to take either the GMAT or the on-campus equivalent test before or on the New Student Orientation Day. For taking the GMAT administered by the ETS, NPU’s Institution code for reporting the GMAT scores is 5485. The score is primarily used for reference and analysis purposes.

6. A professional work history or a professional vita. Applicants with prior work experience in his/her study field must also submit an employment certification letter issued by the previous employer to certify the following for the applicant: Company name and address, supervisor’s name and contact information, applicant’s previous job title, and a brief job description.

7. Applicants to the DBA program are encouraged to also submit their Statement of Purpose.

8. An international student is also required to submit the following additional documents: (a) copy of applicant’s passport, (b) a financial support document – either the applicant’s bank statement or a certified affidavit of support (form I-134 or equivalent) from a financial sponsor indicating that a minimum amount of $30,000 is available for the applicant to pursue his/her study in the first academic year at NPU, (c) a transfer student (from a U.S. institution) is required to submit a photocopy of his/her previous I-20 form, visa, and I-94 (U.S Department of Homeland Security issued arrival / departure form). The student will be asked to show an identification document attesting his/her official name, if applicable.

- Notification of Admission

Upon approval of admission, prospective students will receive a notification of admission status. An applicant may be admitted with full or conditional admission status. An applicant denied for admission will receive an explanation for their denied application. Processing times will vary. Processing begins upon receipt of all hard copies of required documents as instructed, and not upon simply submitting an application.

- Confirming Intent to Report

All accepted applicants are required to confirm their intent to report to reserve their place in the accepted term. Instructions, applicable fees and due dates are provided in the acceptance package.

- Cancellation of Admission

If an applicant is accepted into a doctorate degree program for a given semester and does not begin classes in that semester, admission will automatically be canceled. The prospective student’s application records (transcripts from previous colleges, financial support documents for international students, and standardized test scores) are kept on file for a period of six months from the semester start date. If the applicant then wishes to be considered for readmission in a later semester, he/she will be required to resubmit an application form and pay the application fee. A reevaluation of admission will be made for the applicant.

- Transfer of Credit

Graduate course credit earned at other accredited higher education institutions may be transferable to meet the student’s graduation requirements if the courses are closely related to the business management course requirements in the DBA program and the grade earned meets the requirement stated below. If the applicant’s previous master’s degree is in the field of business administration, a maximum of 36 graduate units may be granted as transfer credits. If the previous master’s degree is in a different field, a maximum of eighteen (18) graduate semester units may be transferred towards the doctorate degree. Course credits to be transferred must be earned with a grade of B or better.

Life/Work Experience: No credit will be awarded for life or work experience.
Definition of a Trimester/Semester Unit:

One trimester/semester credit hour equals, at a minimum, 15 classroom hours of lecture, 30 hours of laboratory, and 45 hours of practicum.

Conversion Factor:

1 quarter unit = 0.66 trimester/semester unit

Admission Evaluation

The admission committee for the DBA degree program will conduct an admission evaluation for each applicant based on the official records received from the applicant. An evaluation report will be generated for the applicant; it includes an academic background evaluation and credit transfer information. A layout of the program requirements is also given in the report.

The background requirements for each doctoral degree program are specified in the section of “Background Preparation” near the beginning of the program description.

Tuition

Tuition for courses taken to fulfill the graduation requirements for the Doctor of Business Administration program is $450/unit.

Refer to the sections on “Tuition and Fees” and “Refund Policy” in this catalog for other fees and refund information.

Academic Information

Refer to the section on “Academic Information” in this catalog for the academic policies and regulations observed by all students.

Graduation Requirements

1. A minimum of 96 semester units beyond the bachelor’s degree are required to complete the study of a doctoral degree program, of which 84 units are for coursework and a minimum of 12 units are for a doctoral dissertation or a comprehensive research project. Transferred graduate credits, up to 36 (or 18) semester units, are included in the total requirements.

2. Length of Study: The length of study in a doctorate degree program is at a minimum three (3) years or nine (9) semesters and a maximum of seven (7) years. The normal length of study for a student with a master’s degree is 3-5 years. A request for an extension of the study period beyond 7 years due to special reasons requires approval by both the Doctoral Program Committee and the School Dean.

3. The doctoral program curriculum is presented in a sequence of course categories in the order of the level of study involved, ending with the doctoral dissertation courses. Courses numbered in the 500’s and above are graduate courses. Several courses numbered in the 400’s with a “G” suffix are scheduled among the required foundation courses and the students may earn graduate credit by taking these courses at NPU.

The doctoral student is advised to follow the specified sequence for the required courses unless otherwise authorized by the registration advisor.

4. All courses require appropriate usage of research and learning resources.

5. There are several milestones during the student’s DBA study. They are related to the preparation work and dissertation research activities. The student is required to form a Dissertation Committee (DC) in preparation for enrolling in the Dissertation Methodology courses as well as setting the student’s dissertation research plan. Refer to the DBA Student Handbook for guidelines and requirements. Students unable to make a satisfactory proposal presentation will be given a final chance to repeat the process. Failure the second time will prohibit the student from continuing his/her study in the DBA program.

6. Each doctoral student’s dissertation or comprehensive research project must be reviewed, evaluated, and assessed by the student’s Dissertation Committee (DC) which has been approved by designated members of the DBA Doctoral Program Committee. The goal of the dissertation research is to apply technologies, knowledge, or concepts in a new way to a workplace problem. A student unable to complete the dissertation or project after earning 12 units in the dissertation/project course is required to continue to enroll in the 6-unit doctoral dissertation course part-II as a continuing student and pay at the regular unit tuition rate until completion of the dissertation/project. Extra credits earned for repeatedly taking the dissertation/project cannot substitute for other course requirements.
7. The doctoral student is required to maintain a minimum of 3.0 CGPA every semester during the entire tenure of study. In addition, a grade of “B-” or better is required in all courses. A doctoral student on academic probation status is given one semester to regain the required CGPA. Failure to do so will result in dismissal of the student from the doctorate degree program.

8. Students with no or limited related work experience are required to engage in curricular practicum before graduation. A student may earn a maximum of 6 credit units through practicum. An approved petition for graduation must be on file.

9. The student must maintain good standing with the University.

- **Faculty**

All faculty members serving as doctoral dissertation/project or academic advisors must possess graduate and terminal degrees, have demonstrated proper academic preparation and experience, and hold an educational philosophy consistent with the University to encourage the best efforts of each learner. Faculty members are encouraged to engage in practical or scholarly research and to publish in professional journals.

Faculty members are to inspire, motivate, and direct student usage of the learning resources.

- **Library & Instructional Resources**

Library and instructional resources are vital to the faculty as well as the doctoral students in their teaching/learning and research activities. The school is equipped with its on-campus learning facilities as well as the online learning resource environment to meet such needs. In this catalog, detailed information is described in the sections on “Teaching and Research Facilities” and “The University Library and Digital Campus”. In addition, the university learning resource facilities provide specific research tools to support the doctoral students in their coursework and research activities.
Doctor of Business Administration (D.B.A.)

Program Administrator: Dr. James Wu, D.B.A.

Objectives: The DBA degree program is designed to develop the student’s ability in advanced academic study, practical research, and professional expertise in business administration. The program aims to cultivate leadership in modern global business development and management. Research emphases are in the fields of global economy, finance, business decision making, marketing strategies, as well as broad digital business intelligence and e-business applications.

Background Preparation

Students admitted into the DBA degree program are required to have proper business background preparation for taking the graduate level coursework. The student must clear all deficiencies before taking the degree required courses. A student with deficiency in any required background subject is required to clear it by taking and passing the appropriate preparatory module course. With advance approval by the academic review committee, the student may be allowed to take a proficiency exam to clear any deficiency subject. The student must also follow the English requirement described in the chapter on Admission Policies.

The following are the business preparatory modules covering all the required background subjects:

- PBUS05 Essentials of Corporate Business Management
- PBUS06 Essentials of Corporate Accounting and Finance

DBA Curriculum

A minimum of 96 semester units of graduate study beyond the bachelor’s degree are required for the DBA program. Among them, 84 units are for graduate coursework and a minimum of 12 units are for doctoral dissertation or comprehensive research project work. Courses at the 4xxG level must be taken at NPU in order to earn graduate credits. The student must meet prerequisite requirements when taking any of the following courses.

I. Foundation Requirements (29 units - First two years of study)

(Foundation in enterprise management and information systems, quantitative analysis)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS460G</td>
<td>Introduction to Business Analytics</td>
<td>(2)</td>
</tr>
<tr>
<td>IT450G</td>
<td>Enterprise Information System Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>MGT450G</td>
<td>Organizational Behavior and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>MKT450G</td>
<td>Marketing Management</td>
<td>(3)</td>
</tr>
<tr>
<td>FIN501</td>
<td>Financial Management</td>
<td>(3)</td>
</tr>
<tr>
<td>FIN522</td>
<td>International Trade and Investment</td>
<td>(3)</td>
</tr>
<tr>
<td>HRM531</td>
<td>Human Resource Management</td>
<td>(3)</td>
</tr>
<tr>
<td>MGT500</td>
<td>Risk Management</td>
<td>(3)</td>
</tr>
<tr>
<td>MGT530</td>
<td>Logistics and Operations Management</td>
<td>(3)</td>
</tr>
<tr>
<td>MGT542</td>
<td>Technology and Product Management</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Prior to taking the Research Methodology courses listed below, the student must form his/her Dissertation Committee which oversees the student’s dissertation research planning and activities.

II. Core Requirements (24 units – Third year of study)

Following the foundation coursework, the student must take advanced level graduate courses, a series of two research methodology courses, and courses for breadth of study, by which the student gains mastery of the subjects of interest and in-depth understanding of related research. Courses described in
this section, especially the **Research Methodology** courses, should be taken by the student immediately following the required foundation courses described in section I.

The student is advised to refer to the DBA Student Handbook for guidelines on all the requirements related to dissertation research work and the final dissertation document.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA601</td>
<td>Research Methodology - I</td>
<td>(3)</td>
</tr>
<tr>
<td>DBA602</td>
<td>Research Methodology - II</td>
<td>(3)</td>
</tr>
<tr>
<td>FIN510</td>
<td>Investment Analysis</td>
<td>(3)</td>
</tr>
<tr>
<td>FIN568</td>
<td>Corporate Finance</td>
<td>(3)</td>
</tr>
<tr>
<td>IT553</td>
<td>Business Intelligence and CRM</td>
<td>(3)</td>
</tr>
<tr>
<td>IT560</td>
<td>Enterprise Resource Planning (ERP)</td>
<td>(3)</td>
</tr>
<tr>
<td>MGT501</td>
<td>Project Management</td>
<td>(3)</td>
</tr>
<tr>
<td>MKT541</td>
<td>Strategic Marketing</td>
<td>(3)</td>
</tr>
</tbody>
</table>

### III. Electives (31 units – Fourth year of study)

The student may take any advanced graduate courses, numbered at 500 or above, to meet the electives requirement. However, doctoral candidates are encouraged to take concentrated coursework to address their career development plan or research interests.

**Curricular Practicum:** Students with no or little experience in the work environment they will be prepared to enter are required to conduct **curricular practicum** before graduation. Other students are also encouraged to take curricular practicum courses and engage in practical training to work on company projects that are directly related to the student’s dissertation research or course of study. The student must observe the rules required for taking the practicum courses.

### IV. Doctoral Dissertation (12 units – Fifth year of study)

The doctoral candidate is required to earn a minimum of **12 units** in the dissertation coursework to meet the graduation requirement. Refer to the DBA Student Handbook for information related to doctoral dissertation.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA698</td>
<td>Dissertation – I</td>
<td>(6)</td>
</tr>
<tr>
<td>DBA699</td>
<td>Dissertation – II</td>
<td>(6)</td>
</tr>
</tbody>
</table>
Course Descriptions

Doctor of Business Administration Program
School of Business Administration and Information Technology

Doctor’s degree courses are numbered in the 500s and 600s. The DBA program curriculum allows for a limited number of credits for 400 level courses with a “G” suffix in its foundation requirements.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>450G-490G</td>
<td>Mezzanine courses for graduates</td>
</tr>
<tr>
<td>500-699</td>
<td>Graduate level courses</td>
</tr>
</tbody>
</table>

For information on prerequisite subjects numbered below 450, refer to the section on Course Descriptions for the Bachelor’s Degree Program, School of Business and Information Technology.

Courses are listed by subject: Business (general courses), Curricular Practicum, exclusive DBA courses, Finance, Green Business Management, Human Resource Management, Information Technology, Law; Management, Marketing. The course lists are followed by a list of preparatory module courses for business graduate programs and a list of online courses.

Each course description is followed by its prerequisite information expressed in course numbers.

Each 1 unit of a practicum course requires at least 45 hours of practical experience related to the student’s program curriculum.

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Business (general courses)

BUS460G Introduction to Business Analytics (2 units)
This course teaches the basics of business analytics. The students learn to use popular data analysis tools to analyze business data for the purpose of understanding business trends, making business forecast, and improving organization’s decision making and business strategies.

BUS460L Introduction to Business Analytics Lab (1 unit)
This course is designed to be taken with the course BUS460 Introduction to Business Analytics. The students gain hands-on experience with business analytics. The students learn to use popular data analysis tools.

BUS501 Quantitative Methods for Business (3 units)
This course is designed to introduce students to contemporary business decision-making methodologies and develop the students’ ability to analyze complex systems. Quantitative methods of management science and operations research using quantitative analysis are the focus of this course. The students learn to evaluate models from real-world examples as well as techniques to analyze and solve the problems. Students also learn to use quantitative analysis software, critically evaluate the results, and perform sensitivity analysis.

Prerequisite: BUS460

BUS589 Special Topics (3 units)
Special topics courses are offered to graduate students in business administration programs by current faculty members or invited guest speakers to expose the students to special topics related to their studies. These courses are conducted the same way as regular courses.

Prerequisite: subject dependent

Curricular Practicum

CPT501 Curricular Practicum (1 unit)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and
instructions concerning this course are provided in the online application form. This is a part-time practicum course taken by the graduate student to work no more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.  
Prerequisite: Refer to the instructions on the application and agreement documents.

CPT502 Curricular Practicum (2 units)
Curricular practicum, or curricular practical training, is a supervised practical experience that is the application of previously studied theory. It is defined as 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 and the course is an integral part of an established curriculum. At least three hours of work in a practical setting has the credit equivalency of one hour of classroom lecture (1 unit). To be eligible to take this course, the student must have obtained a written agreement that outlines the arrangement between the institution and the practicum site (including specific learning objectives, course requirements, and evaluation criteria), and received approval by a designated advisor. International students must follow additional rules required by the U.S. Immigration and Customs Enforcement. Information and instructions concerning this course are provided in the online application form. This is a full-time practicum course taken by the graduate student to work more than twenty hours each week during the approved practicum period. Failure in this course will prevent the student from taking any curricular practicum course afterwards.  
Prerequisite: Refer to the instructions on the application and agreement documents.

DBA

DBA601 Research Methodology - I (3 units)
This course focuses on how to conduct research as well as how to prepare a research plan or proposal for a scholarly journal article, dissertation, or thesis. The course will be conducted through formal lectures, seminars given by invited speakers, and the student’s engagement in practical research work. The student will be required to complete an applied research project.
Prerequisite: BUS460

DBA602 Research Methodology - II (3 units)
This course focuses on research methods, particularly using advanced statistical analysis methods to prepare research papers for publication as scholarly journal articles or submission as dissertations or theses. The students may be required to submit their research papers for publication in various journals. The course will introduce various statistical analysis methods for testing hypotheses. The course will be conducted with various forms, including formal lectures, seminars given by invited speakers, and each student’s engagement in practical research work. The student will be required to complete an applied research project.
Prerequisite: DBA601

DBA689 Advanced Topics (3 units)
Advanced topics courses are offered to the doctorate program students in the DBA program by current faculty members or invited guest speakers to expose the students to new subjects related to their studies. These courses are conducted the same way as regular courses.
Prerequisite: DBA601

DBA698 Dissertation - I (6 units)
This is the first of a two-part dissertation course series required for each doctorate student. The research and dissertation work are designed for the student to demonstrate his/her ability of independent research as well as integrating and applying original and practical research in the subject matter. The student should also demonstrate his/her clear understanding of related research and research methodology for professional-oriented projects/thesis. The Doctor of Business Administration student enrolls in this course after completing almost all other required coursework. A dissertation committee (DC) for monitoring the dissertation must be formed and approved by the Doctoral Program Committee before the student begins his/her dissertation work. The student works with his/her dissertation advisor throughout the project. Effort must involve practical research which provides a first exposure to some fundamental issues in the domain of knowledge relevant to the student’s study fields.
Prerequisite: DBA602

DBA699 Dissertation – II (6 units)
This is the second of the two-part dissertation course series required for each doctorate student. The doctorate student who has completed the first part of this course must enroll in this second course to continue his/her dissertation work until completion. Upon completing the project, the student must submit his/her dissertation for a review by the DC; the student should also give an open forum dissertation defense to the DC members and other invited faculty members and outside guests. The student must receive the DC’s final approval for completing the dissertation course series. If the student fails to complete the dissertation by the end of the semester in which this course was registered, the student must retake this course.
Prerequisite: DBA698
Finance

FIN501 Financial Management (3 units)
This course is designed to further introduce modern financial theories, tools, and methods used for the analysis of financial problems. The point of view of corporate financial managers will be taken to interact with efficient capital markets. Therefore, while making the best use of constrained resources is necessary, maximizing shareholders’ equity is also vitally important. The primary focus is on analysis and forecast of internal operations and the use of short-term and long-term capital.
Prerequisite: PBUS06

FIN510 Investment Analysis (3 units)
This course covers the foundations of investment management. Topics include theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies.
Prerequisite: FIN501

FIN512 Financial Risk Management (3 units)
This course is designed to further introduce modern financial theories, tools, and methods in dealing with financial risks. Financial risk management has become an extremely important discipline for corporations, financial institutions, and many government enterprises, particularly in challenging economical times.
Prerequisite: FIN501

FIN522 International Trade and Investment (3 units)
This course covers the theories of international trade, through comparative advantage and related corporate strategies, the impacts of emerging regional economic blocks, the institutions of the multilateral trading system, and trade barriers. Students will learn the mechanics of international payment, shipping, and distribution.
Prerequisite: FIN501

FIN568 Corporate Finance (3 units)
This course belongs to the accounting/finance concentration area of study. The first part of the course covers essential corporate finance subjects including executive compensation, corporate governance, and bankruptcy law. Lectures, discussions, and case studies will be the form used for this part of study. The second part of the course consists of discussions of corporate financing such as mergers, acquisitions, valuations; corporate restructuring, LBOs’, MBOs’, and merchant banking.
Prerequisite: FIN501

FIN580 Portfolio Management (3 units)
This course teaches advanced portfolio decision making. Topics include index models, portfolio performance measures, bond portfolio management and interest immunization, stock market anomalies and market efficiency.
Prerequisite: FIN501

FIN585 International Finance (3 units)
This course prepares the students for a career in international finance. The course discusses the financial environment in which the multinational firm and its managers must function. The course focuses on foreign exchange management and financial management in a multinational firm. It points out to the students the basic principles of profit-seeking and risk avoidance practices in the volatile global financial markets.
Prerequisite: FIN501

Green Business Management

GBM500 Green Business Management (3 units)
This course aims to provide the student an understanding of the mounting demand for business management practices to create not just financial value but to effectively respond as well to the environmental sustainability and social responsibility concerns of society. It will provide the student familiarity of the “best practices” of businesses in responding to this demand to create “sustainable value” and an understanding of the basic principles behind these practices. The course will also develop in the student an appreciation and a sense of commitment to practice “greener” business management practices in their future professional careers.
Prerequisite: PBUS05

GBM505 Green Economics and Policy (3 units)
Green economics represents a transdisciplinary attempt to integrate the social sciences (primarily economics) with the natural sciences (primarily ecology). This course is designed to re-orient the resource allocation decisions of managers in a way that the decision outcome criterion is not simply economic efficiency but sustainability. More specifically, the course seeks to teach students the principles of resource allocation that achieve economic, ecological and social sustainability. While economic efficiency is still a paramount decision objective, it should be pursued after measures are taken to guarantee that human activities do not threaten the viability of life on our planet and that all people can secure and produce the means for leading healthy lives (guarantee of basic human rights). The sustainability problems of unregulated markets are also examined.
Prerequisite: GBM500
GBM510 Green Business Marketing (3 units)
In this emerging green era, green business marketing faces unique challenges. On the one hand, it involves dealing with a major trend without formulated requirements; on the other hand, it faces a rapidly growing number of conscious green consumers demanding green business practices. As a result, new marketing strategies, vehicles, and tools are needed by businesses. In this course the students learn to develop marketing plans and requirements. Case studies and group projects will be conducted as part of the coursework requirements.
Prerequisite: GBM500

Human Resource Management

HRM531 Human Resource Management (3 units)
This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.
Prerequisite: PBUS05

HRM603 Strategic Workforce Planning (3 units)
This course begins with the discussion of the need for manpower planning and gives samples of plans developed for various types of organizations such as manufacturing, high-tech, small business, etc. This course would give students an opportunity to learn about and develop a manpower plan which is part of the business plan and also an ongoing dynamic document developed as a part of the strategic planning component of the organization. It also has to do with scheduling, rosters and succession planning which is a process of identifying a long-term plan for the orderly replacement of key employees. The course also explores cases of developing a manpower plan including developing a Gap Analysis to determine manpower needs and budgeting for the manpower needs. Developing new HR manpower configurations such as self-managed teams, telecommuting, outsourcing, temps-to-hire and other methods to make companies more flexible and offer economical solutions to the high cost of knowledge workers. The course includes case studies and actual writing of several manpower plans for various sizes of organizations.
Prerequisite: HRM531

Information Technology

IT450G Enterprise Information System Fundamentals (3 units)
This course provides a general introduction to information systems for electronic enterprise with emphasis on system functions, deployment planning, integration technologies, and administration basics. Topics include enterprise information system categories, Portals, ERP, CRM, application integration, industry standards, and system platforms. In addition, students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.
Prerequisite: PBUS05

IT510 Advanced e-Business Programming and Design (3 units)
This course is designed for the students to learn details of Perl and CGI programming and applications. Topics include client/server concept, Perl programming, mechanism of CGI, Apache web server, and creating CGI applications with Perl, HTML, JavaScript, and database. Hands-on exercises throughout the course are required.
Prerequisite: IT453

IT553 Business Intelligence and CRM (3 units)
A major challenge to a business in the information age is to turn mountains of data into useful information that can help business managers analyze sales trend, customer behavior, and other key performance metrics to make the best decisions. This course introduces students to the effective methodology and a wide range of techniques used to generate business intelligence (BI) and applications to customer relationship management (CRM). Topics include: data warehouse and data mart, extraction, transformation, and loading (ETL) process, Ad hoc query and reporting, data mining, and CRM systems. The students will explore new software and tools provided by companies such as Oracle, Teradata, SAS, and Business Objects, and gain hands-on experience in BI and CRM applications. Real case studies in this course will also help the students gain business insight. Taking this course should sharpen the students’ abilities to advance their professional career with this IT trend. The students will explore SAP R3 software and gain hands-on experience in BI and CRM applications.
Prerequisite: IT450
IT560 Enterprise Resource Planning (ERP) (3 units)
This course teaches the students to use SAP software for enterprise resource planning. Students will learn the mySAP technology and how it applies new web computing and e-business philosophy to help the different market segments solve their business issues and processes. The following will be discussed: cross-industry solution- CRM, e-procurement and business intelligence; Internet Transaction server, mySAP workplace, marketplace, security within mySAP environment, web application server, mySAP.com projects implementation, solution in different industries, and SAP future and challenge. Case studies will also assist the students’ learning in this course.
Prerequisite: IT450

IT589 Special Topics on Information Technology (3 units)
Special topics courses are offered to graduate students in the MBA program by current faculty members or invited guest speakers to expose the students to emerging information technologies. These courses are conducted the same way as regular courses.
Prerequisite: IT450

Management

MGT450G Organizational Behavior and Management (3 units)
This course explores the complex dimension of organizational behavior including examination of experiential and conceptual approaches to communication, self-awareness, perception, motivation, problem solving and culture. Students apply interpersonal and intrapersonal exploration to the management of change, leadership theories and organizational issues. Real case projects are required.
Prerequisite: BUS05

MGT500 Risk Management (3 units)
This course is designed to teach the students risk management concepts, process, strategy making and implementation in a corporate environment. Topics covered include the nature and concept of risks, risk management structure and process flow, information and gathering techniques, data analysis methodology and tools, and risk management techniques. Case studies and a project are required.
Prerequisite: BUS460

MGT501 Project Management (3 units)
This course introduces the principles of project and program management, the roles of project management, matrix organization in both private and public segments, and project management techniques leading to the efficient execution and completion of projects. Proposal development, case studies, and independent projects are required.
Prerequisite: BUS460

MGT505 Advanced Project Management (3 units)
This course is designed for the graduate students who choose to pursue a career in project management and wish to become an effective project leader. The course covers the following topics: human factors, leadership, team development, customer negotiation, contract negotiation, procurement management, as well as advanced techniques in project management. The students also learn to use tools for project planning, control, and implementation. Independent research and/ or small-group projects will be required.
Prerequisite: MGT501

MGT530 Logistics and Operations Management (3 units)
This course is designed to prepare students with the ability in logistics and operations management. Topics include how managers plan and control operations to achieve optimum productivity, top quality, and customer satisfaction, qualitative and quantitative methods of managing production and operations, methods of total quality management (TQM) and continuous improvement in the service industries and in production operations. Students will also learn to plan for and operate under changing technologies in international operations and in integrated operations. The instructor may demonstrate SAP R/3 operations module.
Prerequisite: BUS05

MGT538 International Business Management (3 units)
This class reviews the classic five functions of management: planning, organizing, staffing, leading, and controlling. Students will compare managerial practices of Europe, Asia, and Latin America. The class also covers the importance of quality and continuous improvement for gaining a competitive edge. Students will learn practical aspects of management from actual case studies, the strategic considerations for management in the international environment, and the roles of the latest information technologies, including computer networks, telecommuting, decision support systems, and CAD, CAM, CAE.
Prerequisite: MGT450

MGT540 Management of Innovation (3 units)
This course is designed to equip the students with the knowledge and management skills to address the needs of new and innovative enterprises in a changing and uncertain environment. Topics include technology forecasting and assessment, program or product selection and control, market...
development, financial management, and regulations and ethics.
Prerequisite: BUS460

MGT542 Technology and Product Management (3 units)
This course is designed to give students a practical experience in product development, and focuses on the management of engineering and technology activities. Topics include technology product design, planning, production, marketing, sales, and maintenance; technological product life cycle from research and development through new product introduction, marketing requirement documentation (MRD), product positioning, channel inventory management, outbound communications, and the organizational role of the product marketing manager. Case studies and project presentations are required.
Prerequisite: BUS460

MGT550 Global Outsourcing Project Management (3 units)
Global outsourcing management is becoming one of the most important new management fields in this highly competitive 21st century global economy. In this course the students will learn the important issues related to global outsourcing management as well as the actual implementation mechanism for a successful global outsourcing management business. Throughout the course, cross-cultural and cross-boarder considerations and diversity management skills will be heavily emphasized. Case studies will be made on successful and failed global outsourcing projects or businesses. It will be easy for the students to connect to this subject due to Silicon Valley’s business climate.
Prerequisite: BUS460

Marketing

MKT450G Marketing Management (3 units)
This course studies marketing management by analyzing real-world cases. Students will learn to implement and execute the marketing process through situation assessment, strategy formulation, marketing planning, marketing implementation and evaluation.
Prerequisite: PBUS05

MKT541 Strategic Marketing (3 units)
This course will teach the students fundamental concepts and practices in marketing research and marketing data analysis, and use of the data and financial analysis to set strategic positioning strategies. Emphasis will be on practical marketing research skills development and basic analysis mechanisms leading to strategic marketing. Students will learn both the primary source (such as surveys) as well as secondary sources (internet, publications, etc.) in research techniques. Students will also engage in their own marketing research projects. Although statistical analysis will be covered in the course, quantitative analysis skills will be the main focus. The course also covers an overview of quantitative and qualitative tools for strategic marketing, market segmentation process, strategic positioning, and channel marketing issues. Case studies and marketing requirements reports are required.
Prerequisite: MKT450

MKT542 Global Marketing (3 units)
This course considers how the culture and environment of different countries affect marketing strategy, how to perform a comprehensive analysis of a country to support marketing plan formulation, the strategic implications of different market groups around the world, and special insights on international marketing from a study of special cases.
Prerequisite: MKT450

MKT545 Global Trade and Operations (3 units)
The course is designed to develop the knowledge and understanding of the global marketing environment and of the concepts, tools, and theory that will prepare the students to take the responsibility for successful global market penetration for his/her business organization. The perspective of the course is managerial, i.e., the ability to identify opportunity, resolve problems, and implement solutions and programs.
Prerequisite: MKT450

Preparatory Module Courses for Business Graduate Students (Non-credit)

PBUS05 Essentials of Corporate Management (3 hr/wk)
This course is an overview of current business management theories and techniques, the organizational environment and related issues, economics factors affecting business decision making, marketing’s role in the company as well as in global economy. Students are required to explore, discuss, and debate the current business practices and ethics.
Prerequisite: ESL401

PBUS06 Essentials of Corporate Accounting and Finance (3 hr/wk)
This is an introductory level course in corporate finance and basic accounting principles. Various topics will be covered such as the basic elements of financial accounting, accounting system and laws regulating the corporate accounting practices, recording and analysis of financial transactions, internal control and cash, accounting principles, the efforts of the corporation's managers to raise and
allocate capital in a manner that will maximize and stabilize the firm's future cash flows. The student will also examine the concepts and techniques available to financial managers.

**Prerequisite:** ESL401

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**Online Courses**

The following courses may be offered periodically with an online mode of instruction. Refer to the section on “Taking Online Courses” on page 16 for instructions for taking online courses.

**FIN501-ON Financial Management (3 units)**

This course is designed to further introduce modern financial theories, tools, and methods used for the analysis of financial problems. The point of view of corporate financial managers will be taken to interact with efficient capital markets. Therefore, while making the best use of constrained resources is necessary, maximizing shareholders' equity is also vitally important. The primary focus is on analysis and forecast of internal operations and the use of short-term and long-term capital.

**Prerequisite:** PBUS06

**GBM500-ON Green Business Management (3 units)**

This course aims to provide the student an understanding of the mounting demand for business management practices to create not just financial value but to effectively respond as well to the environmental sustainability and social responsibility concerns of society. It will provide the student familiarity with the “best practices” of businesses in responding to this demand to create “sustainable value” and an understanding of the basic principles behind these practices. The course will also develop in the student an appreciation and a sense of commitment to practice “greener” business management practices in their future professional careers.

**Prerequisite:** PBUS05

**HRM531-ON Human Resources Management (3 units)**

This course provides students and practicing managers with a comprehensive overview of essential personnel management concepts and techniques. The focus is on essential topics such as job analysis, candidate screening, interviewing, testing, hiring, evaluating, training, motivating, promoting, compensating and their associated legal constraints. Additional topics covered include global HR, diversity awareness and training, and sexual harassment legal requirements. Practical applications such as how to appraise performance and benefits and handle grievances are explored. Additionally, developing independent work teams that foster creativity and innovation will be discussed.

**Prerequisite:** PBUS05

**IT450G-ON Enterprise Information System Fundamentals (3 units)**

This course provides a general introduction to information systems for electronic enterprise with emphasis on system functions, deployment planning, integration technologies, and administration basics. Topics include enterprise information system categories, Portals, ERP, CRM, application integration, industry standards, and system platforms. In addition, students will also receive an overview of enterprise IS applications such as CMS, ERP, CRM, KM, SCM, and related technologies including Java, XML, etc. Case studies and hands-on practice are required. SAP is introduced to the students.

**Prerequisite:** PBUS05

**MGT450G-ON Organizational Behavior and Management (3 units)**

This course explores the complex dimension of organizational behavior including examination of experiential and conceptual approaches to communication, self-awareness, perception, motivation, problem solving and culture. Students apply interpersonal and intrapersonal exploration to management of change, leadership theories and organizational issues. Real case projects are required.

**Prerequisite:** PBUS05

**MGT501-ON Project Management (3 units)**

This is the first of a sequence of courses designed for graduate students who are interested in pursuing the project management concentration area of study. Principles of project and program management will be introduced, followed by the roles of project management, matrix organization in both private and public segments, and project management techniques leading to the efficient execution and completion of projects. Students also learn to identify and analyze project risks, plan for risk reduction or elimination, control of risk-related factors, and to manage projects under risk conditions. These techniques are useful in project proposal development, in project planning, and in project operational management. Methods for ongoing risk assessment and project performance evaluation are included. Proposal development, case studies, and independent projects are required.

**Prerequisite:** BUS460

**MGT530-ON Logistics and Operations Management (3 units)**

This course is designed to prepare students with the ability in logistics and operations management. Topics include how managers plan and control operations to achieve optimum productivity, top quality, and customer satisfaction, qualitative and
quantitative methods of managing production and operations, methods of total quality management (TQM) and continuous improvement in the service industries and in production operations. Students will also learn to plan for and operate under changing technologies in international operations and in integrated operations. The instructor may demonstrate SAP R/3 operations module.

Prerequisite: PBUS05

MGT542-ON Technology and Product Management (3 units)
This course is designed to give students a practical experience in product development, and focuses on the management of engineering and technology activities. Topics include technology product design, planning, production, marketing, sales, and maintenance; technological product life cycle from research and development through new product introduction, marketing requirement documentation (MRD), product positioning, channel inventory management, outbound communications, and the organizational role of the product marketing manager. Case studies and project presentations are required.

Prerequisite: BUS5460

MKT541-ON Strategic Marketing (3 units)
This course will teach the students fundamental concepts and practices in marketing research and marketing data analysis, and use of the data and financial analysis to set strategic positioning strategies. Emphasis will be on practical marketing research skills development and basic analysis mechanisms leading to strategic marketing. Students will learn both the primary source (such as surveys) as well as secondary sources (internet, publications, etc.) in research techniques. Students will also engage in their own marketing research projects. Although statistical analysis will be covered in the course, quantitative analysis skills will be the main focus. The course also covers an overview of quantitative and qualitative tools for strategic marketing, the market segmentation process, strategic positioning, and channel marketing issues. Case studies and marketing requirements reports are required.

Prerequisite: MKT450

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Although the writing, editing, and publishing of this catalog have been guided by an effort to attain total accuracy, no responsibility can be assumed for editorial, clerical, or typographical errors or an error occasioned by an honest mistake. All information contained in this catalog is subject to change, without prior notice, by the officials of the University, and does not constitute an agreement between the University and the student.

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UNIVERSITY MILESTONES

Northwestern Polytechnic University (NPU) was founded on January 2, 1984 and incorporated as a California nonprofit, public-benefit institution. Because of the strong demand in Silicon Valley for qualified engineers, the School of Engineering began to offer the Bachelor of Science in Electrical Engineering degree in November 1984, followed by the Master of Science in Electrical Engineering in 1985. NPU opened the Computer Systems Engineering programs at both the bachelor's and master's degree levels in 1987. Under high-spirited teamwork, NPU grew quickly from a budding school of a few students and faculty in 1984 to a well-established school by 1989. February 23, 1989 marked a milestone for the University as NPU attained full institutional approval from the California Department of Education. When the entrepreneurial spirit in Silicon Valley demanded students with business training, NPU established the School of Business and began to offer the Master of Business Administration and Bachelor of Business Administration and Information Sciences degrees in 1995. At the same time, the School of Engineering continued to expand its programs by offering bachelor's and master's degrees in computer science with curricula emphasizing computer software applications in various fields based on the industry trends. In January 1998, the Accrediting Council for Independent Colleges and Schools (ACICS) accredited NPU to award bachelor's and master's degrees. In April 2005, ACICS accredited NPU to award two doctorate degree programs: Doctor of Business Administration and Doctor of Computer Engineering.

Modern information technology has greatly impacted the administrative and instructional environment of higher education over the last 20 years by providing effective information management tools for campus operational management and program instructions. Incorporating information technology in campus infrastructure has been a clear and vital operational goal for NPU as it moves steadily towards the digital campus of tomorrow. NPU formulated its digital campus initiatives in the late nineties. Four phases of development plans and activities were defined then and have been implemented successfully. An effective IT team has been maintain and supporting the needs in electronics and digital technologies by the students, faculty, and administrators.

BOARD OF TRUSTEES

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Fremont, CA

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Professor/Dean Emeritus, UC-Davis
Sacramento, CA

Professor Paul Jensen
Life Sr. Member, IEEE
Former Dean, School of Business & Information Technology, NPU
Pleasanton, CA

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Mayor, City of Milpitas
Milpitas, CA

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Assoc. Dean, Department of EE
San Jose State University
San Jose, CA

Dr. Asayehgn Desta
Professor, Dominican University
San Rafael, CA

Mr. David Logan
Former V.P., HP
Palo Alto, CA

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Dr. Hongwei Du
Professor, CSU-East Bay

Dr. Chiwen Liou
Principal Application Developer

Dr. Tsu-Hong Yen
Professor, SJSU
School of Engineering

Dr. Boyd Flower
Manager, Google

Dr. Chenchi Kuo
Manager, Google

Dr. Mahmudur Rahman
Professor, SCU

ADMINISTRATION

Mr. Peter Hsieh, President
Mr. Paul Choi, Chief Institutional Assessment Officer
Ms. Monica Sinha, Director of Admissions
Ms. Judy Weng, Director of Academic Advising
Ms. Erin Shimizu, Registrar
Mr. Gerald Wong, Legal Counsel and Compliance Officer
Ms. Lily Hsiao, Director of Facilities and Information Technology

Dr. Jahan Ghofraniha, Dean, Academic Affairs
Dr. Pochang Hsu, Dean, R&D
Dr. Tai Hsu, Dean, School of Engineering
Dr. James Wu, Dean, School of Business & IT
Dr. Ben Liu, Dean, General Studies

NPU FACULTY

School of Engineering

Henry Chang (1991)
D.C.E., Northwestern Polytechnic University, CA, 2008
M.B.A., Northwestern Polytechnic University, CA 2010
M.A.C.S., University of Texas - Austin, TX, 1983
B.S.E.E., Tatung Institute of Technology, Taiwan, 1974
Network security, embedded engineering, wireless engineering, image processing, object-oriented design and analysis, and internet software development and applications.

Ken Cheung (1998)
M.S.C.S.E., Northwestern Polytechnic University, CA, 1997
B.S., Industrial Engineering, Hong Kong Polytechnic University, 1991
Algorithms analysis and design, computer systems design and simulations, e-commerce, database design, networking applications, MS Windows system and .NET applications.

Jahan Ghofraniha (2003)
Ph.D. E.E., University of British Columbia, Vancouver, Canada, 1997
Master of Applied Science, University of British Columbia, Vancouver, Canada, 1990
B.S.M.E., Sharif University of Technology, Tehran, Iran, 1985
DSP, wireless systems, digital communications, algorithm development and implementation in digital and wireless communication systems.

Chester He (2005)
D.C.E. Northwestern Polytechnic University, CA 2014
M.S.C.S., Northwestern Polytechnic University, CA 2001
Computer networks and network security, web technology, database applications, software testing.

Pochang Hsu (1997)
Ph.D., E.E., The University of Arizona, AZ, 1993
B.S., Engineering Science, National Cheng Kung University, Taiwan, 1984
High performance digital systems design, high performance CMOS system interface, microelectronics, VLSI systems.

Tai Hsu (2004)
Ph.D. C.S., Oregon State University, OR, 2003
M.B.A., Northwestern Polytechnic University, CA 2010
M.S.C.S., Missouri University of Science and Technology, MO, 1994
B.A.C.S., Wartburg College, Iowa, 1992
Data mining, Unix system programming and administration, Windows system and administration, biocomputing, bioinformatics, robotic systems.

Stephen Hyatt (2011)
Ph.D., Engineering Materials, University of Windsor, Canada, 1990
M.S., Ceramic Engineering, Georgia Institute of technology, GA, 1981
Experimental engineering, statistical design and analysis of experiments in the areas of process development, new product introduction, and quality improvement; reliability engineering and statistical methods for life prediction of products.

Thawi Iwagoshi (2014)
Ph.D., Material Science & Engineering, The Ohio State University, OH, 1996
M.S., Ceramic Engineering, The Ohio State University, OH, 1990
B.S., Ceramic Engineering, The Ohio State University, OH, 1987
Web-based applications, structured programming, Java applications.

David Li (2014)
Ph.D., Engineering Sciences, Harvard University, MA, 1998
S.M., Harvard University, MA, 1993
Network engineering, system engineering and project management, object-oriented design and programming.
Robert Lin (2014)  
M.S.E., Computer Aided Design, The University of Michigan at Ann Arbor, MI, 1983  
M.S., Oceanic Science, The University of Michigan at Ann Arbor, MI, 1983  
Computer networks, embedded engineering, project and product management.

Xiaohang Liu (2013)  
Ph.D., Geography, University of California at Santa Barbara, CA, 2003  
M.S.C.S., Rutgers University, NJ, 1999  
Geographical information systems, digital mapping, image analysis, pattern recognition.

Kenneth Ng (2014)  
Ph.D., C.S., University of California at Los Angeles, CA, 1999  
M.S.C.S., University of Southern California, CA 1989  
B.E.C.S., Huajiao University, China, 1985  
Database technology, N-Tier architecture system, application server and web applications.

Yingli Ren (1998)  
M.S.E.E., Santa Clara University, CA, 1995  
B.S.E.E., Stanford University, CA, 1987  
Logic design and synthesis, CAD tools, Verilog and HDL, ASIC and PLD design techniques, and software design tools development.

Hua-Yu Su (1988)  
M.S.E.E., University of Maryland, MD, 1982  
B.S.E., National Cheng-Kung University, Taiwan, 1975  
Integrated circuit design, analog circuits, digital circuits, mobile systems.

Ted Sun (2012)  
Ph.D., E.E., Santa Clara University, CA, 2013  
M.S.E.E., Northwestern Polytechnic University, CA, 1999  
M.S. Management Science, University of Dayton, OH, 1994  
B.E. Atr. Science, National Central University, China, 1989  
Reliability engineering and statistical methods for IC failure prediction, CAD/EDA tool applications, ASIC design methodology, physical design verification, Unix/Linux systems operations, scripting language automation.

Siu Ming Tong (1998)  
M.S.C.S., San Jose State University, CA, 1998  
B.E.C.E., Hefei University of Technology, China 1982  
DSP firmware for real-time video conferencing in Windows NT environment, designing Windows NT audio device drivers, designing SCSI and IDE drivers, designing BIOS, VGA driver, algorithm design.

Nels Vander-Zanden (1999)  
Ph.D., C.S., University of Illinois, Urbana-Champaign, IL, 1991  
M.S.C.S., University of Illinois, Urbana-Champaign, IL, 1986  
B.S.C.I.S., Ohio State University, OH, 1984  
Software design and development, hardware/software co-design automation, microarchitecture optimization, and VHDL synthesis.

Jagadeesh Vasudevanurthy (2007)  
Ph.D., Electrical Engineering, McGill University, Canada, 1991  
B.E., E.E., University of Mysore, India, 1979  
Logic design, logic synthesis, and technology mapping tools for both FPGA and ASIC architecture.

Jin-Sheng Wang (2014)  
Ph.D., E.E., Michigan State University, MI, 1998  
M.E., E.E., Western Michigan University, MI, 1995  
B.S., Engineering Science, National Cheng Kung University, Taiwan, 1989  
Circuit system design, analysis, modeling; analog/mixed-signal circuit design, high-performance switched-current circuits for low-voltage analog signal processing applications, wireless communication and signal processing.

Chris White (1999)  
M.S.E.E., Northwestern Polytechnic University, CA 1999  
B.S.E.E., Northwestern Polytechnic University, CA 1997  
Logic design, microprocessor and digital systems, EDA tools, logic synthesis, computer architecture.

Alex Wu (2014)  
Ph.D., Applied Mechanics & Engineering Sciences, University of California at San Diego, CA, 1998  
B.S., Engineering, Precision Machinery & Instrumentation, University of Science & Technology of China, 1986  
Reliability engineering, design and system integration of data storage devices, applying statistical analysis and data mining technology to engineering product and project management.

Steve Wu (2004)  
Ph.D., Computer and Information Science, Ohio State University, OH, 1980  
M.S., Computer and Information Science, Ohio State University, OH, 1976  
B.S.E.E., National Cheng Kung University, Taiwan, 1972  
Internet technology, IP networks, network storages with embedded software, client-server computing, database enterprise application integration, operating systems and network management; innovative high-tech product development, project management.

Bin Zhang (2000)  
M.S.C.S., Fudan University, China, 1988  
B.S.C.S., Fudan University, China, 1985  
Networking and real-time embedded systems network protocol, inter-process communication and distributed database in cross platform environments.

School of Business and Information Technology

D.B.A., Northwestern Polytechnic University, CA, 2013  
M.B.A., Chadwick University, AL, 1996  
B.S. Accounting, Biola University, CA, 1990  
Accounting, payroll services, human resources management.

James Connor (2013)  
M.B.A., California State University at East Bay, CA, 1983  
B.S.E.E., Worcester Polytechnic University, MA, 1981  
Marketing management, product and project management, new business development, computer networks, communication engineering, Unix/Linux systems, cloud computing.
Kenneth Fung (2003)  
M.B.A., University of Hawaii at Manoa, HI, 1999  
B.B.A., University of Hawaii at Manoa, HI, 1997  
Accounting, finance, auditing, information system administration.

Yann Huang (2007)  
D.B.A., Golden Gate University, S.F., CA, 2004  
M.S., Telecommunication Management, Golden Gate University, S.F., CA, 1993  
M.B.A., Computer Information Systems, Golden Gate University, S.F., CA, 1993  
B.A., Economics, Chinese Culture University, Taiwan, 1991  
Business development and organization management, information management system design and applications, e-business technology.

Magdy Hussein (2007)  
Ph.D., Organization and Management, Capella University, MN, 2006  
M.B.A., Global Management, University of Phoenix, AZ, 2002  
B.S., Telecommunication and Electronics Engineering, University of Helwan, Egypt, 1978  
Organizational theory and behavior, operations management, global business, operations management, marketing and global competitive strategies.

George Jen (2001)  
M.B.A., Northwestern Polytechnic University, CA, 2011  
M.S.C.E., Wayne State University, Detroit, MI, 1989  
B.E., Computer Engineering, Shanghai University, China, 1983  
Database design and administration, ERP system design, Internet application programs, software development.

James Nysather (2008)  
M.B.A., International Management, Thunderbird School of Global Management, AZ, 1999  
B.S., Marketing, St. Cloud State University, MN, 1988  
Business development, marketing, business management.

David Paul (2004)  
D.B.A., Northwestern Polytechnic University, CA, 2010  
M.B.A., California State University, Hayward, CA, 1998  
B.S.E., Chemical Engineering, Princeton University, NJ, 1967  
Systems engineering management, strategic business management, venture business consulting, engineering process optimization.

Swapna Sinha (2008)  
D.B.A., Golden Gate University, CA, 2006  
B.A., History, University of Lucknow, India, 1986  
Business development, marketing, finance, strategic management

Kevin Sung (2006)  
M.B.A., Northwestern Polytechnic University, CA, 2005  
B.S.E.E., Northwestern Polytechnic University, CA, 2003  
Project and program management, logistic and operations management, strategic analysis and implementation in systems and product quality improvement.

D.B.A., Northwestern Polytechnic University, CA, 2012  
D.C.E., Northwestern Polytechnic University, CA, 2008  
M.B.A., Woodbury University, CA, 2001  
B.E., E.E., Tamkang University, Taiwan, 1983  
Financial planning, investment, risk management, solar cell technologies, memory system, thin film deposition and process technology.

Wanda Wong (2009)  
M.B.A., California State University, East Bay, CA, 1996  
B.A., Computer Science, UC-Berkeley, CA, 1987  
Accounting, accounting information system, finance and taxation.

James Wu (2007)  
D.B.A., Golden Gate University, S.F., CA, 1992  
M.B.A., University of California- Berkeley, CA, 1985  
B.B.A., National Taiwan University, Taiwan, 1982  
Finance, investment, international business management, economics, organizational management.

Charles Zhi (2008)  
Master of Accountancy, Golden Gate University, CA, 1997  
Bachelor of Economics, Central University of Finance & Economics, China, 1989  
Accounting, taxation, and finance.

General Studies

Donald Bradley (2006)  
M.S., City & Regional Planning, University of Southern California, CA, 1962  
B.S., Public Administration, University of Southern California, CA, 1961  
City planning, architecture, public administration, behavioral health psychology, drug prevention counseling, and public health.

Furong Gao (2014)  
Ph.D., Statistics, University of Illinois at Urbana-Champaign, IL, 1997  
Data analysis, statistical software applications, statistical modeling, psychometric testing.

Ph.D., Systems & Industrial Engineering, University of Arizona, AZ, 1995  
B.S., Marine Engineering, Republic of Korea Naval Academy, South Korea, 1982  
System engineering and analysis, Mathematical modeling and simulation. Physics and mechanical analysis; statistics analysis and decision theory.

Ben Liu (1996)  
Ph.D., Biomathematics, University of Alabama, Birmingham, AL, 1979  
A.M., Physics, Dartmouth College, NH, 1975  
B.S., E.E., National Taiwan University, Taiwan, 1969  
Instrumentation and physical measurements, electronic computation, mathematical analysis, physics, brush painting.

Zhupei Shi (2003)  
Ph.D., Physics, New York University, NY, 1993  
M.S., Physics, New York University, NY, 1992  
B.S., Nuclear Physics, Fudan University, China, 1985  
Nanotechnology, fiber-optic communication technology, nanoelectromechanical systems (NEMS), computational physics, device physics.
Jesse Tsao (2001)
Ph.D., Journalism, Southern Illinois University at Carbondale, IL, 1991
M.A., Information and Communication Studies, California State University at Chico, CA, 1983
B.A., Journalism, Fu Shing Kong College, Taiwan, 1970.
Interpersonal/ small group /organization/mass intercultural communication, communication theory, journalism.
DIRECTIONS TO NPU

► From I-880: Exit I-880 at Mission Blvd.-Warren Ave. and take Mission Blvd. East (towards the hills). Turn right onto Warm Springs Blvd. Drive past Warren Ave. to Fourier Ave. Turn right onto Fourier Ave. to go to the learning facilities. Fourier Avenue turns into Westinghouse Dr. where the NPU Administration Office is located.

► From I-680: Exit I-680 at Mission Blvd.-Warm Springs District and drive west on Mission Blvd. (towards the Bay) to Warm Springs Blvd. Turn left onto Warm Springs Blvd. Drive past Warren Ave. to Fourier Ave. Turn right onto Fourier Ave. to go to the learning facilities. Fourier Avenue turns into Westinghouse Dr. where the NPU Administration Office is located.

Administration Office
47671 Westinghouse Drive, Fremont, CA 94539
Tel: 510-592-9688; Fax: 510-657-8975

School of Engineering
105-119 Fourier Avenue, Fremont, CA 94539

School of Business & Information Technology
47655 Warm Springs Blvd., Bldg. A, Fremont, CA 94539

North Building
47102 Mission Falls Court, Fremont, CA 94539

Recreation Center
47655 Warm Springs Blvd., Bldg. B, Fremont, CA 94539

Online Education Center
47613 Warm Springs Blvd., Fremont, CA 94539

NPU Campus Map

1. Administration Building
47671 Westinghouse Dr., Fremont, CA 94539

2. Library and Student Service Center (WEST Bldg.)
117 Fourier Ave., Fremont, CA 94539

3. School of Engineering (EAST Bldg.)
105 Fourier Ave., Fremont, CA 94539

4. Online Education Center
47613 Warm Springs Blvd., Fremont, CA 94539

5. School of Business & Info. Tech. & Recreation Center (South Bldg.)
47655 Warm Springs Blvd., Fremont, CA 94539

6. North Building
47102 Mission Falls Court, Fremont, CA 94539
### AMENDMENTS TO CATALOG

**Bold – addition**

**Strikethrough – removal**

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<th>Section/Page from prior version</th>
<th>Amendment</th>
<th>Date of Change</th>
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<tr>
<td>p. 5 Fees</td>
<td>Int’l student transfer-out processing fee (not for NPU alumni) <strong>$300→$150</strong></td>
<td>04/05/2016</td>
</tr>
<tr>
<td>VA EDUCATIONAL ASSISTANCE p. 9</td>
<td><strong>VA EDUCATIONAL ASSISTANCE</strong> The University is authorized by the U.S. Veterans Administration (VA) to accept qualified veterans who receive veteran’s education benefits. In administering student financial and academic affairs for veteran and military students, the University follows VA and related military regulations. A newly admitted student is required to submit a Certificate of Release or Discharge from Active Duty Form (Form DD 214). Please contact the NPU Administration Office for additional information.</td>
<td>02/25/2016</td>
</tr>
<tr>
<td>STATE OF CALIFORNIA STUDENT TUITION RECOVERY FUND p. 6</td>
<td><strong>STATE OF CALIFORNIA STUDENT TUITION RECOVERY FUND</strong> California law requires that, upon enrollment, a fee be assessed in relation to the cost of tuition. This fee supports the Student Tuition Recovery Fund (STREF), a special fund established by the California legislature to reimburse students who might otherwise experience a financial loss as a result of untimely school closure. Students may be reimbursed by STREF only for prepaid but unused tuition. Institutional participation is mandatory (Education Code Section 94342). It is mandatory that enrollees keep a copy of any enrollment agreement, contract, or application to document enrollment, tuition receipts or canceled checks to document the total amount of tuition paid, and records which will show the percentage of the program which has been completed. Such records would substantiate a claim for reimbursement from the STREF, which, to be considered, must be filed within one year following school closure. If a student has obtained a judgment against the institution for any violation of the law and the student certifies that the judgment cannot be collected after diligent effort, a claim can be made to the STREF within two years after the date upon which the judgment became final. For further information or instructions, contact: Bureau for Private Postsecondary Education, P. O. Box 980818, West Sacramento, CA 95798. Phone: (916) 431-6959; 888-370-7589.</td>
<td>02/25/2016</td>
</tr>
<tr>
<td>Calendar</td>
<td>February 6-20 Summer semester application deadline for international students</td>
<td>02/01/2016</td>
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<td>Cover Page</td>
<td>Spring 2015-2016</td>
<td>01/04/2016</td>
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<tr>
<td>Repeating courses Pg. 14</td>
<td>In such cases, both grades will appear on the student’s permanent record, but only the latest grade earned for the same course will be calculated towards the student’s cumulative grade point average. In such cases, only the latest grade earned for the same course will be kept in the student’s permanent records.</td>
<td>01/04/2016</td>
</tr>
</tbody>
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