DEPARTMENT OF COMPUTER SCIENCE

Mission

The Department of Computer Science offers a Bachelor of Science Degree in Computer Information Systems (CIS) and an Associate of Science degree in Computer Networking.

The B.S. in Computer Information Systems: This degree is designed to prepare students for three post-baccalaureate options: to go on to graduate school in computer information systems; to work in businesses and other organizations as a developer or supporter of the organization’s information systems; to enter the business side of high technology industry with a solid knowledge of the technical side of the business.

The A.S. in Computer Networking: This degree is also designed to prepare students for three post-degree options: to go on to the upper division in the Computer Science Department and seek a baccalaureate degree; to gain the knowledge necessary to take the examination leading to certification as a Cisco Systems Network Associate; to join the workforce as a specialist in computer networking.

Today’s world runs on information, and the computer-based information system is the tool that gathers, stores, organizes, and integrates data so that it becomes useful, so that it becomes information. Without these information systems, most modern organizations would be hard pressed to meet their strategic, tactical and operational goals. The B.S. in Computer Information Systems prepares students to develop and support information systems by training them in systems analysis and design, in application development, and in the use of databases.

The Internet carries information around the world, and intranets carry information within organizations. The hardware that makes both the Internet and intranets possible consists of an array of devices that includes computers, servers, switches, routers and other equipment as well as software that controls the operation of these devices. In each organization, this hardware and software must be configured into networks that reflect the particular communication needs of the organization. The networks that are developed must be maintained to assure the continuous ability of those in the organization to access information and to communicate internally and externally. The A.S. degree in Computer Networking prepares individuals to join the information technology workforce as specialists in the maintenance of computer-based communication networks.

Goal

The goal of both degree programs is to prepare students for careers in fields that support the world’s computer-based systems of communication. Graduates are prepared to enter such disciplines as Telecommunications Management, Network Management, Systems Analysis, High Technology Marketing and Sales, and Information Systems Design. While the A.S. program is centered on gaining expertise with hardware, software and network design, the B.S. program combines coursework in programming, database management, data communications, and system administration with substantial coursework in business. Thus, the student who is awarded the B.S. in Computer Information Systems is prepared to enter either the business side or the technical side of today’s electronic-communication-dependent businesses and industries.

Affording students hands-on experience is central to the educational philosophy followed in the Department of Computer Science. The Department maintains two computer science laboratories and shares a workshop with NHU’s science programs. Students gain practical experience by developing computer programs and applications, and by building computers, networks, and communications systems. The Department also strives to place students in internships in high technology industry during the course of their tenure at the University so that students have the opportunity to apply what they are learning in real world settings.

Also central to the educational philosophy of the Department and the University is that students learn in a multicultural setting where all cultures are respected and celebrated and where every effort is made to assure a successful educational experience regardless of whether a student has come to the University directly from high school or is re-entering education after years or even decades in the workforce. In respecting diversity, we strive to be cognizant of, and responsive to, multiple styles of learning. We set high expectations of our students and provide support services and mentoring that enable those high expectations to be met.

An interdisciplinary approach is employed in Department coursework. Our intention in taking this approach is that students emerge from their university experience not simply with solid knowledge in their major area, but also as citizens well prepared to take their place in the world, in society, and in the workforce. That is why majors in both the A.S. and B.S. programs must take a balanced mix of classes inside and outside the Computer Science Department to fulfill all requirements for the major. For example, majors will take courses in writing and history. They do so because the ability to communicate effectively is indispensable in corporations driven by information. Individuals who understand themselves and what they do in the context of time and the changes that occur over time are likely to know not just how to communicate but also what to communicate and why to communicate it.
Of particular importance for students working toward the baccalaureate are the required business courses. Information systems gain much of their worth from how and how well they are used in corporate contexts. Information systems specialists will be most valuable in corporations if they know not just about information systems but also about how businesses function and how information systems support those functions. By the same token, those on the business side of corporations will be most valuable to the corporation when they understand the workings of the technical infrastructure that enables them to do their jobs. And in our region, it is often the case that the function of a business is to develop and sell technology. The individual who knows both business and technology is of exceptional value in high technology industry.

**Computer Proficiency Examination**

The National Hispanic University has implemented a Computer Proficiency Assessment Program (SAM 2000 – Skills Assessment Manager 2000) that measures a student’s proficiency in computer application skills (Word Processing, Presentation Development, Spreadsheet and Database). The assessment considers four individual examinations; each measuring the skills learned in the CS 100 and CS 103 courses. These examinations are required of all new students. The following are the keys features of the examinations.

1. The examination will be given in the computer laboratory, library or SAAC. A client/server environment will accommodate the testing process.

2. The examination will be given during the CS 100 and CS 103 classes. The SAM 2000 assessment consists of the following 4 examinations:

   - CS 100 midterm exam
   - CS 100 final exam
   - CS 103 midterm exam
   - CS 103 final exam

3. A minimum score of 70% must be achieved for each examination.

4. All students’ records will be stored on the SAM 2000 server database.

5. If students want to challenge CS 100 and/or CS 103 course(s), they must do so separately. See the catalog section “Credit by Examination” for details.

6. Even if students successfully challenge the CS 100 and/or CS 103 course(s), they still must pay the tuition for the credited units.

**ASSOCIATE OF SCIENCE DEGREE IN COMPUTER NETWORKING**

The curriculum in the Associate of Science Degree in Computer Networking is designed with a three-fold purpose:

- To prepare the student to continue work toward a Bachelor’s degree in computer science or related field.
- To provide the student with the knowledge and skills to enter the workforce.
- To prepare the student to become certified as a Cisco Network Associate.

**Requirements**

In order to meet the academic requirements for graduation with an Associate of Science Degree in Computer Networking from The National Hispanic University, the student must:

1. Complete a minimum of 75 units of college credit, including:
   - A minimum of 34 units of General Education to satisfy the GE Breadth requirement
   - 10 units of NHU Core Courses
   - All required Computer Science Courses (or their equivalent), 31 units
   - Attain an overall grade point average of “C” (2.0) or higher.

**General Plan**

<table>
<thead>
<tr>
<th>NHU Core Courses</th>
<th>10 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science Courses</td>
<td>31 units</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>75 units</td>
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**NHU Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CS 100</td>
<td>Introduction to Computers</td>
<td>3 units</td>
</tr>
<tr>
<td>CS 103</td>
<td>Advanced Computer Applications</td>
<td>3 units</td>
</tr>
<tr>
<td>SPA 100</td>
<td>Elementary Spanish I OR SPA 230</td>
<td>3 units</td>
</tr>
<tr>
<td>SPA 230</td>
<td>Spanish for the Spanish Speaker</td>
<td>3 units</td>
</tr>
<tr>
<td>INF 100</td>
<td>Information Competency</td>
<td>1 unit</td>
</tr>
</tbody>
</table>
**General Education Courses**

**Area A: Communication In The English Language (9 units)**

**Oral communication**
- SPC 100 3 units
- Speech

**Written Communication**
- ENG 100 3 units
- English Composition and Reading

**Critical Thinking**
- ENG 201 3 units
- Critical Thinking, Reading, and Writing Across the Curriculum
  - OR
  - PHL 200
  - Introduction to Logic

**Area B: Natural Life Science and Mathematics (13 units)**

**Life Science**
- BIO 100 4 units
  - General Biology

**Physical Science**
- CHE 130 3 units
  - Chemistry
- PHY 120 3 units
  - Physics

**Mathematics**
- MAT 100 3 units
  - College Algebra

**Area C: Arts, Letters, and Humanities (3 units)**

**Letters**
- PHL 100 3 units
  - Introduction to Philosophy

**Area D: Social and Behavioral Science (6 units)**

**Comparative Systems**
- HIS 100 3 units
  - U.S. History

**Social Issues**
- HIS 201 3 units
  - U.S. History II

**Area E: Life-Long Understanding and Cultural Diversity (3 units)**

- ANT 125 3 units
  - Human Understanding and Development

**Computer Science Courses**

- CS 107 3 units
  - Personal Computer Systems
- CS 110 3 units
  - Data Communications and Networking
- CS 130 3 units
  - Network Operating Systems
- CS 212 3 units
  - Internet Protocols
- CS 220 4 units
  - Networking Basics
- CS 221 4 units
  - IOS Configuration
- CS 222 4 units
  - Routing and Switching
- CS 223 4 units
  - Network Design (WANs)
- CS 290 3 units
  - IT Internship
**BACHELOR OF SCIENCE IN COMPUTER INFORMATION SYSTEMS**

In order to meet the academic requirements for graduation with a Bachelor of Science in Computer Information Systems, students must:

- Complete a minimum of 128 semester units of college credit;
- Satisfy the NHU General Education Breadth requirements as described in this catalog;
- Meet requirements for NHU Core Courses;
- Meet requirements for the major as described in this catalog;
- Meet the University’s residency requirement which is the completion of 30 semester units at NHU;
- Complete a minimum of 45 upper division units;
- Complete a minimum of 15 upper division units in the major;
- Attain an overall grade point average of “C” (2.0) or higher with a “C” (2.0) or higher in all units attempted in the major.

In addition, students must:

- File a formal application for a degree with the University at the completion of 100 units;
- Ensure that all financial obligations to the University have been met, including payment of outstanding fees.

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### General Plan

<table>
<thead>
<tr>
<th>Component</th>
<th>Units</th>
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<tbody>
<tr>
<td>NHU Core Courses</td>
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<tr>
<td>General Education Courses</td>
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<tr>
<td>- Lower Division (40 units)</td>
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<td>- Upper Division (9 units)</td>
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<tr>
<td>C.I.S. Major Courses</td>
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<td>- Business Lower Division (9 units)</td>
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<tr>
<td>- Business Upper Division (9 units)</td>
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<tr>
<td>- Computer Science Lower Division (24 units)</td>
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<tr>
<td>- Computer Science Upper Division (27 units)</td>
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<td>Total</td>
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### NHU Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>CS 100</td>
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</tr>
<tr>
<td>CS 103</td>
<td>3</td>
</tr>
<tr>
<td>SPA 100</td>
<td>3</td>
</tr>
<tr>
<td>SPA 100</td>
<td>3</td>
</tr>
<tr>
<td>INF 100</td>
<td>1</td>
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</tbody>
</table>

### General Education Courses

#### LOWER DIVISION REQUIREMENTS (40 units)

**Area A: Communication In The English Language (9 units)**

- **Oral communication**
  - SPC 100  Speech
  - ENG 201  Introduction to Logic

- **Written Communication**
  - ENG 100  English Composition and Reading

- **Critical Thinking**
  - ENG 201  Critical Thinking, Reading, and Writing Across the Curriculum
  - PHL 200  Introduction to Logic

**Area B: Natural Life Science and Mathematics (10 units)**

- **Physical Science**
  - GEO 200  Physical Geography
- **Life Science**
  - BIO 100  General Biology

- **Mathematics**
  - MAT 100  College Algebra
Area C: Arts, Letters, and Humanities
(9 units)

Arts
ART 100 3 units
Art Appreciation

Letters
PHL 100 3 units
Introduction to Philosophy

Humanities
ENG 250 3 units
Contemporary Multicultural Literature

Area D: Social and Behavioral Science
(9 units)

Human Behavior
ANT 100 3 units
Introduction to Anthropology

Comparative Systems
HIS 100 3 units
U.S. History I

Social Issues
HIS 201 3 units
U.S. History II

Area E: Life-Long Understanding and Cultural Diversity
(3 units)

ETH 134 3 units
Chicano/Latino Culture

Upper Division Requirements (9 units)

Area F: Advanced Written Communication
(3 units)

ENG 300 3 units
Advanced Writing Skills

Area G: Human Expression Across the Globe
(3 units)

ENG 301 3 units
World Literature

Area H: World Issues and Problems
(3 units)

HIS 314 3 units
World History I
OR
HIS 414 3 units
World History II

Computer Information Systems Major Courses

Business Lower Division Requirements (9 units)

BUS 101 3 units
Introduction to Business

BUS 240 3 units
General Accounting Principles

BUS 260 3 units
Business Statistics

Business Upper Division Requirements (9 units)

BUS 325 3 units
Business Communication

BUS 351 3 units
Business Ethics

BUS 368 3 units
Project Management

Computer Science Lower Division Requirements (24 units)

CS 101 3 units
Introduction to Programming

CS 105 3 units
Object-Oriented Programming I

CS 106 3 units
Object-Oriented Programming II

CS 107 3 units
Personal Computer Systems

CS 110 3 units
Data Communications and Networking

CS 130 3 units
Network Operating Systems
CS 150 3 units
Elementary Algorithms and Data Structures

CS 212 3 units
Internet Protocols

**Computer Science Upper Division Requirements**

**(27 units)**

CS 300 3 units
Introduction to Internet/Telecommunications

CS 322 3 units
Client Administration

CS 330 3 units
Database Management Systems

CS 332* 3 units
Server Administration

CS 340* 3 units
Advanced Networking

CS 360 3 units
Object-Oriented Analysis and Design

CS 380 3 units
Graphical Programming

CS 460 3 units
Management of Information Systems

CS 490 A 3 units
Computer Information Systems Internship

*OR*

CS 490B
Computer Information Systems Senior Project