

# *Hawai'i Pacific University*

Computer Science/Computer Information Systems



- *B.S. in Computer Science*
- *B.S.B.A. in Computer Information Systems*

# Computer Science/Information Systems

## *Hawai'i Pacific University*

HPU offers a contemporary, well-reasoned sequence of computer science classes in both the CS and CIS undergraduate degree programs. Both programs are based on the recommendations of the professional organizations in the field, and they have been developed on the belief that a solid, rigorous foundation in problem solving is required for these degrees. That foundation is provided in the Computer Science I/II series of courses. Upper-division courses in the curriculum provide students with excellent preparation either for success and growth in professional jobs or for acceptance into outstanding graduate programs in their field.

The success of HPU's computer science and computer information systems programs is noteworthy. Companies that have been recruiting at HPU for our graduates have included IBM, Microsoft, Volt, Verizon, CISCO, Lucent Technologies, and others. The success of our graduates has prompted one major corporation to simply ask, "Do you have more where they came from?" Students completing the CS and CIS programs have also been accepted into graduate programs at Stanford University, the University of Florida, the University of Wisconsin at Madison, Iowa State University, and other top schools.

In addition, both the CS and CIS programs are highly integrated with Hawai'i Pacific University's Master of Science in Information Systems (MSIS) program. Completing a computer-related undergraduate degree can give a jump start into the demanding, yet highly successful MSIS degree program.

Students can also integrate a strong background in computer science into other interdisciplinary degree programs at Hawaii Pacific University.

## ➤ *Co-Curricular Activities*

With computer science sections averaging fewer than 25 students per class, students have ample opportunity to interact with their professionally active faculty, both in and out of the classroom. The active HPU Computing Club has student leadership, faculty advisors, and many excellent opportunities. Students can hear and question practitioners and leaders in the field of information management, access new ideas, visit institutions with dynamic information systems, and initiate important social contacts with other aspiring computer science and information system professionals. Epsilon Delta Pi, the computer science honor society, regularly admits into membership students of exceptional academic accomplishment.

## ➤ *Facilities*

HPU has extensive computing facilities and capabilities for student use. These include:

- Wireless connectivity at nearly all places on both main campuses, including all dorms
- Eight lab classrooms, with computer stations for every student
- Six open computer labs for student use on both main campuses
- More than 400 computers dedicated to student use
- University membership in the Microsoft Developer's Network Academic Alliance, which allows all students taking a computer science course to download free Microsoft software



### Computer Science/Major Courses:

- Computer Science I and II
- Assembly Language and Web Design
- Program Problem Solving and Data Structures
- Algorithms
- Systems Analysis
- Database Technologies
- Data Communications
- Computer Organization
- Operating Systems
- Networking
- Computer Security and Information Assurance
- C#
- Visual Basic
- C++
- Java
- Mobile Application Development
- Programming Challenges
- Software Project

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## ► *Technology, Problem Solving, and a Global Perspective Enhance Competitive Prospects*

Technology and computers are having a dramatic impact on nearly every industry around the world. To prepare students for this rapid evolution, computer science classrooms are equipped with state-of-the-art computing and projection technology. Wireless capabilities are available at nearly every point of the main HPU campuses, and students are encouraged to make use of electronic resources in many of their courses. Teleconferencing, collaborative software capabilities, and online courses are also available to expand the classroom to anywhere in the world.

The Frear Center, which houses four lab classrooms as well as additional technologically enhanced classrooms, provides hands-on experiences for students in many of their classes. This allows them to experiment and apply their learning, as well as to work interactively on team projects.

The entire faculty works together as a team to insure that students receive the strongest possible preparation for later jobs or graduate degree programs. In addition to being familiar with the latest technological capabilities, students need a strong background in problem solving to be able to adapt to ever-

changing demands in the business world. This is generally the most sought after skill when students later look for jobs. All the courses in the computer science curriculum allow students to integrate perspectives and develop skills relating to problem-solving techniques. These skills can then be applied in all of a student's other courses, as well as areas beyond the classroom.

Seniors in both the CS and CIS majors are required to take a capstone course related to software development, which integrates many of the aspects about technology and problem solving that they have learned previously. Computer science majors, working in teams just as they will do professionally, go through all the technical phases of developing a significant software product. CIS majors focus primarily on systems analysis and project management issues. Students in both majors gain invaluable experience that prepares them for the challenges they will face after graduation. Employers today seek individuals who can convey complex technical information to varied audiences, build rapport with end users, and serve as vital members of project teams. One group of seniors recently developed a Stock Market

Simulation Game for a nonprofit organization, and the software was used as the central feature of a large fundraising event.

Internships with leading companies are also available and provide an excellent way for students to apply their knowledge and skills in real-world environments. Many students that have started with companies as an intern have continued into regular positions with the same companies after graduation.

Global citizenship is a central part of the University's mission, and students come to HPU from more than 100 foreign countries and all 50 states. In the classroom, this multicultural environment enriches instruction through the contributions of students that have widely diverse perspectives and experiences. In an increasingly global economy, HPU students enjoy enhanced competitiveness because they have a worldwide network of cohorts and a truly global view.

*CS/CIS students and program chair are honored for software contributions to the business community*



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## ➤ *Computer Science (CS)*

The Bachelor of Science in Computer Science degree meets the high standards of model programs proposed by such organizations as the Institute of Electrical and Electronic Engineers. The courses in the major can be broadly divided into three areas: computer languages and problem solving; software systems design (systems analysis, database design, and management applications); and computer organization (hardware technology,

operating systems, and data communications). A senior project allows students to apply all the skills and knowledge acquired throughout the program to a challenging and relevant software problem. The curriculum is designed to provide students with excellent preparation for jobs in the growing field of computer science or for further graduate studies.

### **Students completing a CS degree will be able to accomplish the following objectives:**

#### **Personal and Professional Productivity**

- Prepare professionally-styled documents for personal and group productivity
- Develop spreadsheets, data analyses, and charts
- Develop templates, macros, and functional relationships for documents
- Design and deliver technology supported presentations
- Create user interfaces and apply database tools

#### **Discrete Structures and Foundations of Computational Theory**

- Understand basic concepts of functions, relations, sets, and counting strategies
- Demonstrate logic and proof techniques in solving problems
- Analyze graphs and tree structures
- Apply probability and statistics as tools in problem solving

#### **Problem-Solving, Programming Languages, and Analysis of Algorithms**

- Apply problem solving techniques for developing algorithms and computer programs
- Demonstrate appropriate use of fundamental programming constructs and data types
- Apply complex data structures, abstraction mechanisms, and object-oriented methodologies
- Understand and apply graphical user interfaces to program solutions
- Analyze fundamental algorithms and determine computability measures

#### **Computer Organization and Architecture**

- Demonstrate knowledge of digital logic principles and components

- Recognize and describe digital representations for data
- Understand the design of digital memory systems
- Apply understanding of assembly-level computer organization
- Describe system architectures and implementation techniques

#### **Software Development Practices**

- Employ software development models, teamwork, and project management for enterprise systems
- Create documentation for all phases of software development
- Employ professional testing principles and practices
- Identify and utilize appropriate software development tools, libraries, and environments

#### **Database Theory and Applications**

- Recognize fundamental information models and systems
- Design and apply relational database systems
- Apply data modeling and analysis techniques to business problems

#### **Networks and Data Communications**

- Demonstrate knowledge of fundamental data communications and networking principles
- Design security measures for networked systems
- Analyze requirements and design solutions for business systems
- Apply net-centric computing techniques to solve distributed computing problems

#### **Operating Systems**

- Understand principles of computer operating systems
- Solve problems relating to process scheduling and concurrency
- Describe systems for memory management
- Employ command-driven and graphic user interfaces

For more information, please contact Dolly Samson at: [dsamson@hpu.edu](mailto:dsamson@hpu.edu)

## ► *Computer Information Systems (CIS)*

The CIS degree is embedded within the business administration program, which, in turn, rests on the broad general education core, as do all majors at the University. The heart of the CIS degree lies in the sequence of courses that includes systems analysis, database theory, and management information systems. Array these with electives in languages, logic, and hardware theory, and the Bachelor of Science in Business Administration (Computer Information Systems) graduate is prepared to immediately contribute to the data processing, information management, or research needs of the business community.

### **Students completing a CIS degree will be able to accomplish the following objectives:**

#### **Personal Productivity**

- Learn advanced software functionality to support personal and group productivity
- Develop templates and macros
- Learn spreadsheets and database tools; Web page design
- Use effective presentation design and delivery methods

#### **Programming, Data, File and Object Structures**

- Provide an exposure to algorithm development,
- Introduce programming and computer concepts
- Study the design and application of data and file structures
- Use of logical and physical structures for both programs and data.

#### **Analysis and Logical Design**

- Understand the system development and modification process
- Use structured and object-oriented analysis and design
- Use of modeling tools in a methodological life cycle
- Introduce project management standards.

#### **Physical Design and Implementation with a DBMS**

- Learn information systems design and implementation within a database management system environment.
- Master design process skills acquired in earlier courses
- Design and construct a physical system using database software to implement the logical design.

#### **Networks and Telecommunications**

- Develop in-depth knowledge of data communications and networking requirements including networking and telecommunications technologies, hardware and software.
- Learn to evaluate, select, and implement different communication options within an organization

## ► *Sample of CS and CIS Graduates*

- **Virgil Dennis, BSCS '03** - Co-founder, Densiu Consulting
- **Eun-Joo Lee, BSCS '03/ MSIS '05** - Systems Analyst, Hawai'i Island Arts
- **Eric Fleckles, BSBA-CIS '04** - Director of IT, Goodsil, Anderson, Quinn & Stifel
- **Darin Iott, BSCS '04** - IT Coordinator, Hawai'i State Department of Health
- **Phil Baldoni, BSCS '05** - Network Administrator, Pinnacle Distribution Concepts
- **Michael Krasucki, BSBA-CIS '05** - Database Manager, Real Estate Title Solutions
- **Desmond Magana, BSCS '05** - Programmer, Microsoft
- **Jun Racca, BSCS '05** - Programmer/Analyst, BigTribe Corp.
- **Andres Vergara, BSCS '05** - Programmer/Analyst, BigTribe Corp.

## *Computer Science Faculty*

- Gabriela Artigas**, Instructor
- Roberta Bush**, Instructor
- Jimmy Cheng**, Affiliate Instructor
- Carl Farrell**, Associate Professor
- Roy Henkel, Jr.**, Instructor
- Clifford Hilman**, Instructor
- Gordon Jones**, Professor and College Dean
- Karen Kareth-Bryant**, Instructor
- Stephen Kula**, Instructor
- Marc Lonnstrom**, Instructor
- George McOuat**, Affiliate Instructor
- James Nelson**, Instructor
- Jimmy Parker**, Affiliate Instructor
- Curt Powley**, Assistant Professor
- Dolly Samson**, Professor and Program Chair
- Gregory Schaper**, Associate Professor
- Laurie Tenzer**, Instructor
- Han Tin Thein**, Instructor
- Terrance Tokuuke**, Instructor
- James White**, Affiliate Instructor
- Alfred Zimmermann**, Assistant Professor

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The U.S. Department of Labor projects that the fastest-growing occupation of this decade will be Software Engineering.

# The Bachelor of Science Degree in Computer Science

## GENERAL EDUCATION CORE (51-53 semester credits)

### Communication and Writing (9 credits)

#### 1. *One of the following:*

COM	1000	Introduction to Communication
COM	2000	Public Speaking

#### 2. *One of the following:*

WRI	1100	Analyzing and Writing Arguments
WRI	1150	Literature and Argument
WRI	1200	Research, Argument, and Writing

### Humanities (12 credits)

#### 1. *One* course from the Humanities Group

#### 2. *One of the following pairs of courses:*

*Both* HIST 2001 World Civilizations I *and* one course from the HIST 2002 group

*Both* HIST 2002 World Civilizations II *and* one course from the HIST 2001 group

#### 3. *One of the following:*

LIT	2000	Introduction to Literature
LIT	2510	Ideas in Literature I
LIT	2520	Ideas in Literature II

### Math and Computer Science (9 credits)

MATH	1123	Statistics
MATH	2214	Calculus I
CSCI	1011	Introduction to Computer Information Systems

### Natural Sciences (3-4 credits)

*One* course from the Biological Sciences group

### Social Science (9-10 credits)

#### 1. *One of the following:*

ECON	2010	Principles of Microeconomics
ECON	2015	Principles of Macroeconomics

#### 2. *One of the following:*

GEOG	2000	Introduction to Human Geography
GEOG	2600	Geography of Travel and Tourism

A cross-cultural course

A modern language

#### 3. *One of the following:*

PSCI	1400	American Political System
PSCI	2000	Introduction to Politics

## Upper-Division General Education (9 semester credits)

COM	3420	Business Communication
ENVS	3000	Science and the Modern Prospect
HUM	4500	The World Problematique

## LOWER-DIVISION REQUIREMENTS (23-25 semester credits)

CSCI	2711	Assembly Language and Systems Programming
CSCI	2911	Computer Science I
CSCI	2912	Computer Science II
CSCI	2913	Program Problem Solving
MATH	2215	Calculus II
PHYS	2030	College Physics I; or PHYS 2050 General Physics I
PHYS	2031	College Physics I Laboratory; or PHYS 2051 General Physics I Laboratory
PHYS	2032	College Physics II; or PHYS 2052 General Physics II
PHYS	2033	College Physics II Laboratory; or PHYS 2053 General Physics II Laboratory

## UPPER-DIVISION REQUIREMENTS (3 semester credits)

MATH	3301	Discrete Mathematics
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## Major Courses (33 semester credits)

CSCI	3101	Algorithms
CSCI	3211	Systems Analysis
CSCI	3301	Database Technologies
CSCI	3401	Data Communications
CSCI	3501	Computer Hardware Theory
CSCI	3601	Operating Systems
CSCI	37xx	(Any programming language course)
CSCI	4911	Software Project I

Plus three upper-division CSCI courses

## UNRESTRICTED ELECTIVES (10-14 semester credits)

# The Bachelor of Science in Business Administration: Computer Information Systems

## GENERAL EDUCATION CORE (51-54 semester credits)

### Communication and Writing (9 credits)

#### 1. One of the following:

COM	1000	Introduction to Communication
COM	2000	Public Speaking

#### 2. One of the following:

WRI	1100	Analyzing and Writing Arguments
WRI	1150	Literature and Argument
WRI	1200	Research, Argument, and Writing

### Humanities (12 credits)

#### 1. One course from the Humanities Group

#### 2. One of the following pairs of courses:

Both HIST 2001 World Civilizations I and one course from the HIST 2002 group

Both HIST 2002 World Civilizations II and one course from the HIST 2001 group

#### 3. One of the following:

LIT	2000	Introduction to Literature
LIT	2510	Ideas in Literature I
LIT	2520	Ideas in Literature II

### Math and Computer Science (6 credits)

MATH	1130	Pre-Calculus I
CSCI	1011	Introduction to Computer Information Systems

### Natural Sciences (6-8 credits)

- One course from the Biological Sciences group
- One course from the Physical Sciences group

### Social Science (12-13 credits)

#### 1. One of the following:

ECON	2010	Principles of Microeconomics
ECON	2015	Principles of Macroeconomics

#### 2. One of the following:

GEOG	2000	Introduction to Human Geography
GEOG	2600	Geography of Travel and Tourism

A cross-cultural course  
A modern language

#### 3. One of the following:

PSCI	1400	American Political System
PSCI	2000	Introduction to Politics

## Upper-Division General Education (6 semester credits)

COM	3420	Business Communication
MATH	3326	Mathematics for Decision Making

## LOWER-DIVISION BUSINESS REQUIREMENTS (18 semester credits)

ACCT	2000	Principles of Accounting I
ACCT	2010	Principles of Accounting II
CSCI	2911	Computer Science I
CSCI	2912	Computer Science II
MATH	1123	Statistics
MGMT	1000	Introduction to Business

## UPPER-DIVISION BUSINESS REQUIREMENTS (30 semester credits)

CSCI	3201	Information Management Using Spreadsheets and Databases
ECON	3020	Managerial Economics
FIN	3000	Business Finance
LAW	3000	Business Law I
LAW	3150	Advanced Business Law for Information Systems Managers/Programmers
MGMT	3100	Business in Contemporary Society
MGMT	3300	International Business Management
MGMT	3400	Human Resource Management
MGMT	4001	Business Policy
MKTG	3000	Principles of Marketing

## MAJOR REQUIREMENTS (18 semester credits)

CSCI	3211	Systems Analysis
CSCI	3301	Data Base Technologies
CSCI	3401	Data Communications
CSCI	4921	Software Project Management

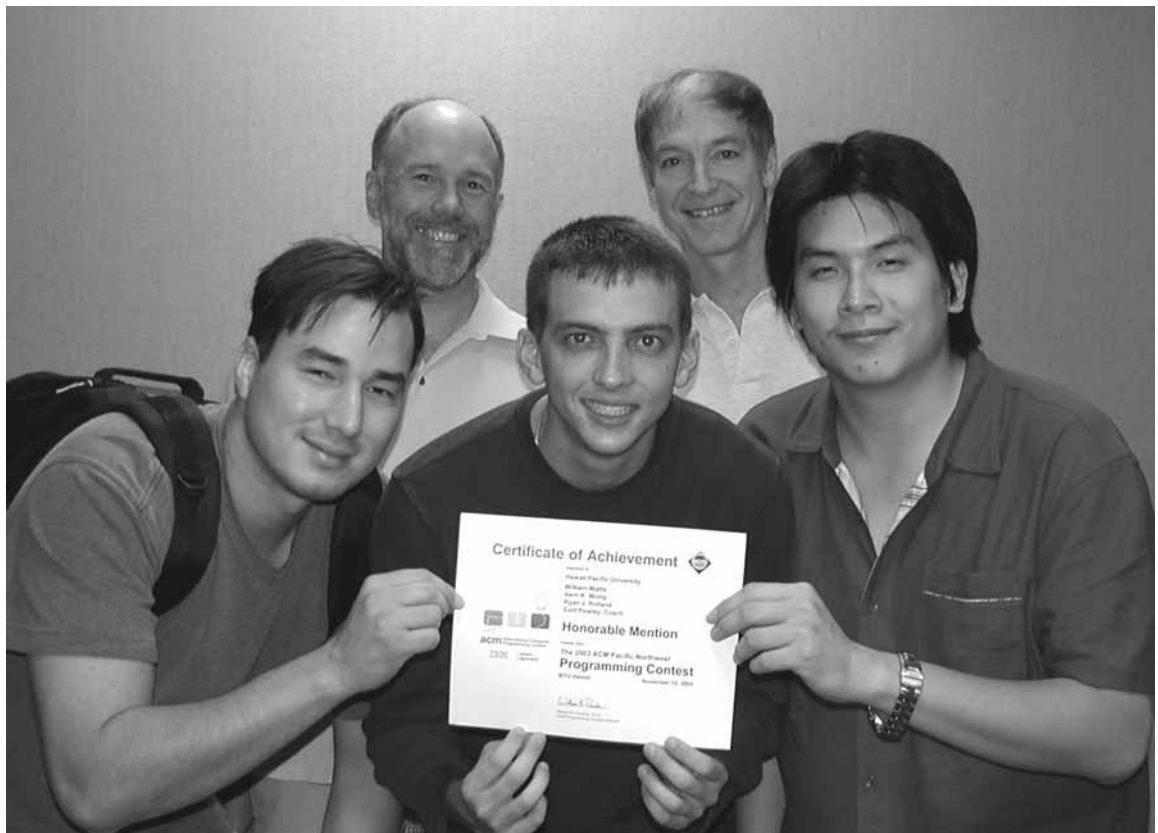
Plus two upper-division business electives

## UNRESTRICTED ELECTIVES (4-7 semester credits)

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## *Other Computer-related Interdisciplinary Degree Programs*

Hawai'i Pacific University recognizes that computer science plays an important part in many other disciplines and degree programs. Computer knowledge and problem-solving skills can provide critical components in many emerging career areas such as biomedical engineering, bioinformatics, health care, nanotechnology, alternative energy or genetic manipulation. Jobs in systems administration also require considerable background in information technology. The University already has some interdisciplinary degree capabilities for students seeking to integrate computer science courses along with other disciplines, and additional degrees are being formulated to keep up with evolving needs of students.



Did you know?

HPU computer science students received first and third place at the regional level of the Association for Computing Machinery collegiate programming competition in 2003.

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# *Computer Information Systems Certificate*

The demands of the modern business world are constantly changing. The Computer Information Systems (CIS) Certificate program is meant to provide the modern tools necessary to execute business procedures with standard programs as well as to customize applications to meet business needs.

Earning a certificate means that the student has obtained competency in database theory, data communications, and a modern programming language.

## **CIS Certificate Requirements**

Students are expected to be familiar with introductory programming concepts and common computer applications to business. To earn the certificate, the student must complete a minimum of four courses, earning a grade of "A" or "B" in each course at Hawai'i Pacific University. This program is not available to BSBA-Computer Information Systems, BSCS, and MSIS majors at Hawai'i Pacific University.

Students must take two courses preferably in one specific language. Current languages include: Visual Basic, C++, C#, and Java.

CSCI	37xx	Modern Programming Language I
CSCI	37xy	Modern Programming Language II

Students must take one of the following courses:

CSCI	3301	Database (undergraduate-level course)
IS	6350	Database Theory (graduate-level course)

Students must take one of the following courses:

CSCI	3401	Data Communicaitons (undergraduate-level course)
IS	6130	Telecommunications (graduate-level course)

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- CSCI 1011** (3)  
**Introduction to Computer Information Systems**  
 An introduction to computer terminology. Topics include concepts, applications, and the impact of computer technology on society. Students have hands-on computer experience with word processing, spreadsheets, and data management programs to help them understand and apply that knowledge in their academic and professional endeavors.
- CSCI 1911** (3)  
**Fundamentals of Programming and Problem Solving**  
 An introduction to computer science and information systems for the purpose of preparing students to study programming and problem solving. Students will be introduced to the foundations of algorithms required for intermediate-level problem solving, and programming language elements and environments required to create, compile, and execute high-level language programs.  
*Pre: MATH 0990 or equivalent.*
- CSCI 2711** (3)  
**Assembly Language and Systems Programming**  
 Students learn assembly-level language programming on contemporary computer systems, integration of assembly language with high-level programming languages, Linux operating systems, and portability of software between Windows and Linux-based computer systems. Course material is reinforced by extensive programming and operating systems assignments.  
*Pre: CSCI 2911 and CSCI 2912; or their equivalents.*
- CSCI 2761** (3)  
**HTML and Web Design**  
 An introduction to HTML and Web site design. Students will learn both the mechanics and aesthetics of good Web design. Topics include basic HTML, working with text and graphics, adding multimedia elements, and controlling page layout with tables or frames. Access to a computer with an Internet connection is essential.  
*Pre: CSCI 1011.*
- CSCI 2911** (3)  
**Computer Science I**  
 The fundamentals of algorithmic problem-solving and structured programming. Topics include: problem analysis and decomposition; stepwise refinement; pseudocode and charting techniques; basic control structures and data types; modularization and parameter passing; files, arrays, testing, program tracing, and debugging. Extensive programming assignments.  
*Pre: MATH 1105 or an equivalent. Recommended completion of CSCI 1011 and MATH 1130 or concurrent enrollment.*
- CSCI 2912** (3)  
**Computer Science II**  
 An intermediate problem-solving and programming course covering composite data structures, abstract data typing, algorithmic analysis, and modular programming techniques. Structured and object-oriented programming methods are reinforced through extensive programming assignments.  
*Pre: CSCI 2911 and MATH 1130; or their equivalents.*
- CSCI 2913** (3)  
**Program Problem Solving**  
 An introduction to advanced problem-solving and programming methods with emphasis on dynamic data structures and recursive algorithms. Modularity, reusability, and memory management are also stressed. Extensive programming assignments.  
*Pre: CSCI 2911, CSCI 2912, MATH 1140, and MATH 3301.*
- CSCI 2916** (1)  
**Computer Science I Lab**  
 Lab component to accompany CSCI 2911. This course will provide directed lab exercises for students to improve their understanding of the content of CSCI 2911 and their skills in creating and debugging computer programs.  
*Pre: CSCI 2911 or concurrent enrollment, MATH 1105 or higher. Recommended: CSCI 1011 or concurrent enrollment, MATH 1130.*
- CSCI 3101** (3)  
**Algorithms**  
 A lecture and laboratory course that provides an overview of design and applications of algorithms. Topics include: simple and complex numerical examples of algorithms; design of solutions to technical programming problems; efficiency of algorithms vis-a-vis particular kinds and systems of software. Extensive lab assignments.  
*Pre: CSCI 2911, CSCI 2912, CSCI 2913, MATH 3301, and MATH 1123.*
- CSCI 3201** (3)  
**Information Management Using Spreadsheets and Databases**  
 Students obtain experience managing information using spreadsheet and database software applications for business and personal productivity through a problem-solving approach. Topics include application design, testing and correctness, reliability, and usability.  
*Pre: CSCI 1011.*
- CSCI 3211** (3)  
**Systems Analysis**  
 An overview of the systems development life cycle with emphasis on techniques and tools of system specifications. The course covers the strategies and techniques of modern systems development.  
*Pre: CSCI 2911, CSCI 2912, and CSCI 3301.*
- CSCI 3242** (3)  
**Modeling and Simulation**  
 The advanced study of mathematical techniques, algorithms, and applications available to assist and improve decision making in management and behavioral science. The focus is on techniques and on the use of the computer in facilitating application of those techniques.  
*Pre: CSCI 2911, CSCI 2912, CSCI 2913, CSCI 3101, MATH 2214, and MATH 1123.*
- CSCI 3301** (3)  
**Database Technologies**  
 An introduction to the rapidly developing capabilities for user-focused database and files management systems. MIS and DSS concepts are covered along with techniques, applications, and development using packaged database management and file manager software. Primary emphasis is on the ability of the computer user to define information needs and then select and use a file manager or database management system appropriate to specified requirements.  
*Pre: CSCI 1011, CSCI 2911, and MATH 1123.*
- CSCI 3302** (3)  
**Advanced Database Exploration**  
 An introduction to database exploration and the discovery of hidden knowledge. Topics include machine learning, learning algorithms, data warehouse structure and design, the knowledge discovery process, data coding, data mining techniques, pattern recognition, and the impact of missing data and noise on knowledge discovery.  
*Pre: CSCI 3301.*
- CSCI 3401** (3)  
**Data Communications**  
 An examination of the principles of data communications for computers and computer terminals, including data transmission performance, communications software, protocols, switching, and simple networks.  
*Pre: CSCI 2911, CSCI 2912, MATH 1105, MATH 1123, and MATH 1130.*
- CSCI 3501** (3)  
**Computer Organization**  
 A computer is regarded as a hierarchy of levels, each one performing a well-defined function. This course provides detailed coverage of the digital logic, micro-architecture, and instruction set architecture levels. Students are required to implement a simulator for a microprogrammed computer architecture using a contemporary high-level, object-oriented programming language.  
*Pre: CSCI 2711, CSCI 2911, CSCI 2912, CSCI 2913, and MATH 3301.*

- CSCI 3601** (3)  
**Operating Systems**  
 An introduction to the fundamental processes of operating systems, covering system structure, process creation and management, memory allocation and management, scheduling, I/O, and device drivers.  
*Pre: CSCI 2711, CSCI 2911, CSCI 2912, CSCI 2913, CSCI 3501, and MATH 3301.*
- CSCI 3611** (3)  
**Unix Systems Administration**  
 This advanced course in the Unix operating system focuses on system administration responsibilities. Topics include system startup and shutdown, system security, performance monitoring and tuning, user administration, file system concepts, and kernel reconfiguration.  
*Pre: CSCI 2711, CSCI 2911, CSCI 2912, CSCI 2913, CSCI 3501, CSCI 3601, MATH 1130, MATH 1140, MATH 3301.*
- CSCI 3621** (3)  
**Networking**  
 This course describes how voice, data, image, and video information are communicated through networking, how it is accomplished, protocol and network configuration, and LAN system software.  
*Pre: CSCI 2711, CSCI 2911, CSCI 2912, CSCI 3401, MATH 1123, and MATH 1130.*
- CSCI 3632** (3)  
**Internet Programming**  
 This course focuses on strategies for providing secure, reliable, and useful Web-based applications. Topics include the development of dynamic Web sites, including client side programming, server side programming, back-end databases, secure transaction processing, and other features of commercial quality Web sites.  
*Pre: CSCI 1011, CSCI 2911, CSCI 3201, and MGMT 1000.*
- CSCI 3640** (3)  
**Computer Security and Information Assurance**  
 The assessment of potential security threats to computer systems. Topics include: controlling site and system access; protecting and maintaining data integrity; environmental/facility considerations such as power and climatological factors; assessing intrusion-detection consideration; theft, espionage, sabotage, and incompetence; backups and alternative systems.  
*Pre: CSCI 1011, CSCI 2911, and MATH 1123*
- CSCI 3721** (3)  
**C#**  
 This course provides the fundamental skills that are required to design and develop object-oriented applications for the Web and Microsoft Windows using C#, the Microsoft Visual Studio .Net development environment, and Microsoft Foundation Classes. Business and scientific problems are solved through object-oriented analysis and design using features inherent to C# and .Net.  
*Pre: CSCI 2911 and CSCI 2912.*
- CSCI 3722** (3)  
**C# II**  
 This course covers the major topics for Windows client application programming using the .NET Framework. Topics include: Windows Forms, Microsoft Foundation Classes, simple data access, interoperating with unmanaged code, threading and asynchronous programming issues, simple remoting, Web access, Web Services consumption, debugging, security, and deployment issues for desktop applications.  
*Pre: CSCI 2911, CSCI 2912, and CSCI 3721.*
- CSCI 3723** (3)  
**Visual Basic**  
 An introduction to scientific and business problems that are solved through software engineering techniques and the capabilities inherent in the language presented. Topics may include: functions, structures, formats, exception handling, I/O, objects, and recursion, where applicable.  
*Pre: CSCI 2911 and CSCI 2912.*
- CSCI 3724** (3)  
**Visual Basic II**  
 An advanced course that draws upon concepts and skills mastered in CSCI 3723. Sophisticated and complex applications of the language and interfaces presented are featured. Major topics may include: routine optimization, modular integration, GUI, large scale implementation, multi-tasking, and multiprocessing.  
*Pre: CSCI 2911, CSCI 2912, and CSCI 3723.*
- CSCI 3753** (3)  
**Java**  
 An introduction to scientific and business problems that are solved through software engineering techniques and the capabilities inherent in the language presented. Topics may include: functions, structures, formats, exception handling, I/O, objects, and recursion, where applicable.  
*Pre: CSCI 2911 and CSCI 2912.*
- CSCI 3754** (3)  
**Java II**  
 An advanced course that draws upon concepts and skills mastered in CSCI 3753. Sophisticated and complex applications of the language and interfaces presented are featured. Major topics may include: routine optimization, modular integration, GUI, large scale implementation, multi-tasking, and multiprocessing.  
*Pre: CSCI 2911, CSCI 2912, and CSCI 3753.*
- CSCI 3990** (1-3)  
**Nonpaid Internship**  
 See Internship section.  
*Pre: CSCI 2911 and CSCI 2912.*
- CSCI 3991** (1-3)  
**Paid Internship**  
 See Internship section.  
*Pre: CSCI 2911 and CSCI 2912.*
- CSCI 4702** (3)  
**Mobile Application Development**  
 A course on the design and development of applications for mobile computing including devices such as mobile phones, PDA's, and tablet PC's. Students will learn best practices in designing for different form factors, creating cross-device GUI's, operating in a wireless/mobile environment, and using device emulators for coding and testing.  
*Pre: CSCI 2911, CSCI 2912, and CSCI 3401.*
- CSCI 4911** (3)  
**Software Project**  
 A lecture and project-oriented course dealing with the application of the principles, skills, and art of the design and construction of software systems in a realistic environment. Topics include: integrating program subsystems into efficient and aesthetic systems; systems standardization; information engineering; and testing.  
*Pre: CSCI 2711, CSCI 2911, CSCI 2912, CSCI 2913, CSCI 3101, CSCI 3211, CSCI 3301, CSCI 3401, CSCI 3501, MATH 1123, MATH 1140 or MATH 1150, MATH 3301, upper-division programming language and last semester before graduation.*
- CSCI 4921** (3)  
**Software Project Management**  
 A lecture and project-based course dealing with the application of principles, skills, and the art of managing a software development project in a realistic environment. Topics include: software development models and economics, team effectiveness, software life cycle phases, determination of software requirements, software development metrics and standards, testing and documentation.  
*Pre: MATH 1123, MATH 1130, MATH 3326, MGMT 1000, MGMT 3100, MGMT 3400, ECON 3020, CSCI 2911, CSCI 2912, CSCI 3201, CSCI 3211, CSCI 3301, CSCI 3401, and last semester before graduation.*
- CSCI 4997** (1-3)  
**Directed Readings in Computer Science**  
 Directed individualized readings.  
*Pre: Consent of instructor.*

# Hawai'i Pacific University at a Glance

**Reputation Outstanding:** A private, not-for-profit, coeducational, nonsectarian, career-oriented postsecondary institution founded in 1965, HPU is consistently ranked among the best educational institutions in the nation. It is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC) and the National League for Nursing Accrediting Commission (NLNAC), Inc. The Bachelor of Social Work program is accredited by the Council on Social Work Education (CSWE). The University is a member of the Association to Advance Collegiate Schools of Business (AACSB International), recognized by the Hawai'i Commission on Postsecondary Education, and approved by the Hawai'i Board of Nursing.

**Location Stunning:** Strategically located in the center of the Pacific Rim—the region with the fastest growing economies in the world—HPU provides an American education in an international setting. Cosmopolitan, culturally vibrant and ethnically diverse, Hawai'i is famous for its clean air and water and a population that enjoys the longest average life expectancy among the 50 states in the nation. In fact, Honolulu was recently ranked one of the safest and cleanest large cities in the United States.

**Campus Distinctive:** With three campuses linked by shuttle, Hawai'i Pacific University combines the excitement of an urban downtown campus with the serenity of a residential campus set in the green foothills of O'ahu's Ko'olau Mountains. The main campus is located in downtown Honolulu, the business and financial center of the Pacific. Eight miles away, situated on 135 acres in Kane'ohe, the Windward Hawai'i Loa campus is the site of the School of Nursing, the College of Natural Sciences (biochemistry, biology, environmental science and studies,

marine biology, oceanography and pre-medical studies) and several liberal arts programs. Just steps from the Pacific, HPU's Oceanic Institute offers research and hands-on opportunities.

**Student Body Incredible:** More than 7,000 undergraduate and 1,200 graduate students from all 50 U.S. states and more than 100 countries make HPU one of the most culturally diverse universities in the world. In fact, the student body is roughly split into thirds—one-third from the U.S. mainland and Canada, one-third from Hawai'i, and one-third from around the globe.

**Academic Programs Comprehensive:** HPU offers more than 50 undergraduate and 12 graduate degree programs in the areas of business administration, communication, and liberal arts and sciences. Students also may enroll in the University's English language—as well as short-term, non-degree—study programs.

**Faculty Accessible:** Multicultural, diverse in their interests and passionate about teaching, HPU faculty are renowned for the personal interest they take in each and every one of their students. HPU boasts more than 450 full- and part-time faculty from around the world with outstanding academic and professional credentials, ensuring that HPU students can easily access a world's worth of knowledge and experiences. A vast majority of HPU faculty hold the highest degrees in their fields. The student/faculty ratio is 18:1, and the average class size is less than 25.

**Value Extraordinary:** With tuition costs almost half the U.S. average, HPU is among the most affordable private universities in the nation. In fact, *Barron's* business magazine lists HPU as one of its "Best Buys" in higher education.

## ACADEMIC PROGRAMS

### Majors

- Accounting
- Advertising
- Anthropology
- Applied Mathematics
- Applied Sociology
- Biochemistry
- Biology
- Business Economics
- Communication
- Computer Information Systems
- Computer Science
- Diplomacy and Military Studies
- East-West Classical Studies
- Economics
- Engineering (3-2)
- English
- Entrepreneurial Studies
- Environmental Science
- Environmental Studies
- Finance
- History
- Human Resource Development
- Human Resource Management
- Human Services
- International Business
- International Relations
- International Studies
  - American
  - Asian
  - Comparative
  - European
  - Pacific
- Journalism
- Justice Administration
- Management
- Marine Biology
- Marketing
- Multimedia

- Nursing
- Oceanography
- Political Science
- Pre-Physical Therapy
- Psychology
- Public Administration
- Public Relations
- Social Sciences
- Social Work
- Teaching English as a Second Language
- Travel Industry Management

### Preprofessional Programs

- 5-Year Dual Degree Program B.S./B.A. and M.A. in Secondary Education
- 3-2 Engineering
- Pre-Chiropractic
- Pre-Law
- Pre-Medical Studies
- Pre-Occupational Therapy
- Pre-Physical Therapy
- Pre-Physician Assistant

### Graduate Programs

- Master of Arts in
  - Communication
  - Diplomacy and Military Studies
  - Global Leadership
  - Human Resource Management
  - Organizational Change
  - Teaching English as a Second Language
- Master of Business Administration
- Master of Education in Secondary Education
- Master of Science in
  - Information Systems
  - Marine Science
  - Nursing
- Master of Social Work

## Hawai'i Pacific University

### Office of Admissions

1164 Bishop Street • Honolulu, Hawai'i 96813-2882  
Phone (808) 544-0238 • Fax: (808) 544-1136  
Toll free U.S. and Canada: 1-866-CALL-HPU  
www.hpu.edu • E-mail: admissions@hpu.edu

### International Center

1164 Bishop Street • Honolulu, Hawai'i 96813-2882 • USA  
Phone (808) 543-8088 • Fax: (808) 543-8065  
Toll free U.S. and Canada: 1-866-CALL-HPU  
www.hpu.edu • E-mail: international@hpu.edu

*Hawai'i Pacific University does not discriminate on the basis of race, color, national or ethnic origin, sex, religion, disability, age, or any other protected class under state and federal laws and regulations in any of its policies, procedures, programs, or practices.*

*There is no contract implied by the contents of this publication.*

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