**General Information section:**

## Minors

**Minors**
Minors, while not required at the college, can enhance and broaden a student’s educational experience and add value for employment or graduate school. Minors require a minimum of 18 credits and most range from 18-24 credits. Minors are open to students in any major, not just a minor in the school of the student’s major. Most majors have a corresponding minor. At least two courses in the minor must be completed at the college. Students must earn a minimum cumulative grade point average of a 2.00 in their minor.

Minors are also available in the following areas: archaeology, behavioral neuroscience, biological anthropology, cultural anthropology, coaching, cybersecurity, data analytics, digital media production, educational studies, gerontology, international business, international governmental non-governmental studies, italian, jazz studies, linguistic anthropology, medical anthropology, public history, queer studies, rhetoric and writing, statistical modeling and web development.

Faculty of Arts and Sciences

Undergraduate Degree Programs

Earl Simson, Dean

Joan Dagle, Associate Dean

Minors

Africana Studies (p. )

Anthropology (p. )—Archaeology, Biological, Cultural, Linguistic, Medical

Archaeology (p. )

Art (p. )—Ceramics, Digital Media, Graphic Design, Metalsmithing and …..

Global Studies (p. )

Health Sciences (p. )

History (p. )

International Nongovernmental Organizations Studies (p. )

Italian (p. )

Jazz Studies (p. )

Justice Studies (p. )

Latin American Studies (p. )

Linguistic Anthropology (p. )

Mathematics (p. )

Medical Anthropology (p. )

Music (p. )

Philosophy (p. )

Physics (p. )

Political Science (p. )

Portuguese (p. )

Professional Writing (p. )

Psychology (p. )

Public History (p. )

Queer Studies (p. )

Rhetoric and Writing

Sociology (p. )

Spanish (p. )

Statistical Modeling (p. )

Theatre (p. )

Web Development (p.)

# Computer Information Systems

**Department of Computer Science and Information Systems**

**Department Chair:** Lisa Bain

**Computer Information Systems Program Faculty: Professor**Bain**; Associate Professor** Hayden**; Assistant Professor** Perry

Computer Information Systems B.S.

Students must consult with their assigned advisor before they will be able to register for courses.

Course Requirements

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| ACCT 201 | Principles of Accounting I: Financial | 3 | F, Sp, Su |
| ACCT 202 | Principles of Accounting II: Managerial | 3 | F, Sp, Su |
| CIS 252 | Introduction to Information Systems | 4 | F, Sp, Su |
| CIS 301 | Introduction to Computer Programming in Business | 4 | F, Sp |
| CIS 421 | Networks and Infrastructure | 4 | F, Sp |
| CIS 440 | Issues in Computer Security | 4 | F, Sp |
| CIS 455 | Database Programming | 4 | F, Sp |
| CIS 462W | Applied Software Development Project | 4 | F, Sp |
| ECON 214 | Principles of Microeconomics | 3 | F, Sp, Su |
| ECON 215 | Principles of Macroeconomics | 3 | F, Sp, Su |
| FIN 301 | Financial Management | 4 | F, Sp, Su |
| MGT 201W | Foundations of Management | 4 | F, Sp, Su |
| MKT 201W | Introduction to Marketing | 4 | F, Sp, Su |

TWO ADDITIONAL COURSES in computer information systems or computer science at the 300-level or above or COMM 230 (for a total of 8 credits):

|  |  |  |  |
| --- | --- | --- | --- |
| COMM 230 | Interpersonal Communication | 4 | F |

COGNATES

|  |  |  |  |
| --- | --- | --- | --- |
| ENGL 230 | Writing for Professional Settings | 4 | F, Sp, Su |
| MATH 177 | Quantitative Business Analysis I | 4 | F, Sp, Su |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |

Note: MATH 177: Fulfills the Mathematics category of General Education.

Note: MATH 248: Fulfills the Advanced Quantitative Scientific Reasoning category of General Education.

Total Credit Hours: 68

Computer Information Systems Minor

Students must consult with their assigned advisor before they will be able to register for courses.

Course Requirements

A minor in computer information systems consists of a minimum of 20 credit hours (five courses), as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| CIS 252 | Introduction to Information Systems | 4 | F, Sp, Su |
| CIS 440 | Issues in Computer Security | 4 | F, Sp |
| CIS 455 | Database Programming | 4 | F, Sp |

AND TWO ADDITIONAL courses from Computer Information Systems at the 300-level or above.

Total Credit Hours: 20

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Data ANALYTICS Minor

Course Requirements

A minor in data analytics consists of a minimum of 24 credit hours (six courses), as follows:

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 177 | Quantitative Business Analysis I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |
|  |   |  |  |
| CIS 252 | Introduction to Information Systems | 4 | F, Sp, Su |
|  |   |  |  |
| CIS 301 | Introduction to Computer Programming in Business | 4 | F, Sp |
|  | -Or- |  |  |
| CSCI 157 | Introduction to Algorithmic Thinking in Python | 4 | F, Sp |
|  |   |  |  |
| CIS 470 | Introduction to Data Analytics | 4 | F |
| CIS 472 | Data Visualization | 4 | As needed |

Total Credit Hours: 24

# Computer Science

**Department of Computer Science and Information Systems**

**Department Chair:** Lisa Bain

**Computer Science Program Faculty: Associate Professors** El Fouly, Ravenscroft Jr., Sarawagi; **Assistant Professors** Hamouda, Liu, Mello-Stark

Students **must** consult with their assigned advisor before they will be able to register for courses. *Note:* Students may not count toward the major more than two courses with grades below C-.

Computer Science B.A.

Course Requirements

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
| CSCI 212W | Data Structures | 4 | F, Sp |
| CSCI 309 | Object-Oriented Design | 4 | F, Sp |
| CSCI 312 | Computer Organization and Architecture I | 4 | F, Sp |
| CSCI 313 | Computer Organization and Architecture II | 3 | F, Sp |
| CSCI 325 | Organization of Programming Language | 3 | F (even years), Sp |
| CSCI 401W | Software Engineering | 3 | F (even years), Sp |
| CSCI 423 | Analysis of Algorithms | 4 | F (odd years), Sp |
| CSCI 435 | Operating Systems and Computer Architecture | 3 | F, Sp (even years) |

THREE COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 305 | Functional Programming | 4 | F |
| CSCI 415 | Software Testing | 4 | Sp |
| CSCI 416 | Web Design | 4 | Spring |
| CSCI 422 | Introduction to Computation Theory | 4 | Sp (As needed) |
| CSCI 427 | Introduction to Artificial Intelligence | 3 | As needed |
| CSCI 428 | Machine Learning | 4 | Sp |
| CSCI 437 | Network Architectures and Programming | 4 | As needed |
| CSCI 455 | Introduction to Database Systems | 3 | F |
| CSCI 467 | Computer Science Internship | 4 | As needed |
| CSCI 476 | Advanced Topics in Computer Science | 4 | Sp |

Cognates

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 436 | Discrete Mathematics | 3 | F, Sp |

IT IS RECOMMENDED that students also take:

|  |  |  |  |
| --- | --- | --- | --- |
| COMM 208 | Public Speaking | 4 | F, Sp |
| ENGL 230 | Writing for Professional Settings | 4 | F, Sp, Su |
| MATH 209 | Precalculus Mathematics | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
| MATH 315 | Linear Algebra | 4 | F |

Total Credit Hours: 49-51

Computer Science B.S.

Course Requirements

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
| CSCI 212W | Data Structures | 4 | F, Sp |
| CSCI 309 | Object-Oriented Design | 4 | F, Sp |
| CSCI 312 | Computer Organization and Architecture I | 4 | F, Sp |
| CSCI 313 | Computer Organization and Architecture II | 3 | F, Sp |
| CSCI 325 | Organization of Programming Language | 3 | F (even years), Sp |
| CSCI 401W | Software Engineering | 3 | F (even years), Sp |
| CSCI 423 | Analysis of Algorithms | 4 | F (odd years), Sp |
| CSCI 435 | Operating Systems and Computer Architecture | 3 | F, Sp (even years) |

THREE COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 305 | Functional Programming | 4 | F |
| CSCI 415 | Software Testing | 4 | Sp |
| CSCI 416 | Web Design | 4 | Spring |
| CSCI 422 | Introduction to Computation Theory | 4 | Sp (As needed) |
| CSCI 427 | Introduction to Artificial Intelligence | 3 | As needed |
| CSCI 428 | Machine Learning | 4 | Sp |
| CSCI 437 | Network Architectures and Programming | 4 | As needed |
| CSCI 455 | Introduction to Database Systems | 3 | F |
| CSCI 467 | Computer Science Internship | 4 | As needed |
| CSCI 476 | Advanced Topics in Computer Science | 4 | Sp |

Cognates

|  |  |  |  |
| --- | --- | --- | --- |
| ENGL 230 | Writing for Professional Settings | 4 | F, Sp, Su |
|  | -Or- |  |  |
| ENGL 231W | Writing for Digital and Multimedia Environments | 4 | As needed |
|  |   |  |  |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 436 | Discrete Mathematics | 3 | F, Sp |
| PHIL 206 | Ethics | 3 | F, Sp, Su |
|  |   |  |  |

ONE COURSE from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 300W | Bridge to Advanced Mathematics | 4 | Sp |
| MATH 314 | Calculus III | 4 | F, Sp |
| MATH 324 | College Geometry | 4 | F, Sp |
| MATH 417 | Introduction to Numerical Analysis | 4 | Sp (as needed) |
| MATH 418 | Introduction to Operations Research | 3 | Sp (even years) |
| MATH 431 | Number Theory | 3 | F, Sp |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |

ONE OF THE FOLLOWING TWO-COURSE SEQUENCES

|  |  |  |  |
| --- | --- | --- | --- |
| BIOL 111 | Introductory Biology I | 4 | F, Sp, Su |
|  | -And- |  |  |
| BIOL 112 | Introductory Biology II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| CHEM 103 | General Chemistry I | 4 | F, Sp, Su |
|  | -And- |  |  |
| CHEM 104 | General Chemistry II | 4 | F, Sp, Su |
|  |   |  |  |
|  | -Or- |  |  |
|  |   |  |  |
| PHYS 101 | Physics for Science and Mathematics I | 4 | F, Sp, Su |
|  | -And- |  |  |
| PHYS 102 | Physics for Science and Mathematics II | 4 | F, Sp, Su |

Note: Connections courses cannot be used to satisfy these requirements.

Note: Eight credit hours from BIOL 111; CHEM 103; MATH 212, MATH 240; or PHYS 101 may be counted toward the Natural Science and Mathematics categories of General Education.

Total Credit Hours: 75-78

Computer Science Minor

Course Requirements

The minor in computer science consists of a minimum of 21 credit hours (six courses), as follows:

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
| CSCI 212W | Data Structures | 4 | F, Sp |
| CSCI 312 | Computer Organization and Architecture I | 4 | F, Sp |

and three additional computer science courses (9-12 credits).

Total Credit Hours: 21-24

Cyber Security Minor

Course Requirements

The minor in cyber security consists of 20 credit hours (five courses), as follows:

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 102 | Computer Fundamentals for Cyber Security | 4 | F, Sp |
| CSCI 157 | Introduction to Algorithmic Thinking in Python | 4 | F, Sp |
| CSCI 402 | Cyber Security Principles | 4 | F, Sp |
| CSCI 410 | Digital Forensics | 4 | F |
| CSCI 432 | Network and Systems Security | 4 | Sp |

Total Credit Hours: 20

WEB DEVELOPMeNT Minor

Course Requirements

The minor in web development consists of a minimum of 20 credit hours (five courses), as follows:

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI 102 | Compute Fundamentals for Cyber Security | 4 | F, Sp |
|  |  |  |  |
| CSCI 157 | Introduction to Algorithmic Thinking in Python | 4 | F, Sp |
|  | -Or- |  |  |
| CIS 301 | Introduction to Computer Programming in Business | 4 | F, Sp |
|  |  |  |  |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
|  |  |  |  |
| CSCI 324 | Dynamic Web Development | 4 | F |
|  | -Or- |  |  |
| CIS 324 | Dynamic Web Development | 4 | F |
|  |  |  |  |
| CSCI 416 | Web Design | 4 | Sp |
|  | -Or- |  |  |
| CIS 416 | Web Deisgn | 4 | Sp |
|  |  |  |  |

Total Credit Hours: 20

**Course Descriptions:**

# CIS - Computer Information Systems

CIS 252 - Introduction to Information Systems (4)

Information systems are an integral part of all business activities and careers. This course introduces students to contemporary information systems and demonstrates how these systems are used throughout global organizations. (Formerly CIS 352 Management Information Systems.)

Prerequisite: Completion of 30 college credits.

Offered: Fall, Spring, Summer

CIS 301 - Introduction to Computer Programming in Business (4)

Introductory course using an object-oriented programming language to solve business problems. Topics include: algorithm concepts and development; object-oriented programming methodologies; graphical interface design and event based programming.

Prerequisite: CIS 252 or CIS 251.

Offered: Fall, Spring.

CIS 302 - Intermediate Computer Programming in Business (4)

Prerequisite: CIS 255, CIS 256, CIS 257, or CIS 301.

Offered: As needed.

CIS 320 - Information Technology: Hardware and Software Systems (4)

The evolution of the major subsystems of computer hardware, technical knowledge of the integration of hardware, and selected operating systems software are examined.

Prerequisite: CIS 251 or CIS 252 or consent of department chair.

Offered: As needed.

CIS 324 – Dynamic Web Development (4)

Students are introduced to basic concepts, issues, and techniques related to designing, developing, and deploying websites. Technology will include current practice and tools for server-side programming. Programming projects are required. Students cannot receive credit for both CIS 324 and CSCI 324.

Prerequisite: CSCI 157 or CIS 301, or consent of department chair.

Offered: Fall.

CIS 350 - Special Topics (4)

New courses are offered by faculty to present latest computer information materials.

Prerequisite: CIS 251 or CIS 252 or consent of department chair.

Offered: As needed.

CIS 351 - Advanced Office Applications for Business (4)

Advanced applications of Office Suite software are examined. Applications include database, spreadsheet, word processing, and presentation graphics.

Prerequisite: CIS 251 or CIS 252 or consent of department chair.

Offered: As needed.

CIS 358 - Mobile Application Development (4)

Students are introduced to mobile application design concepts and programming components. These concepts and components include simple mobile programs (e.g. canvas, animation and games); global variables and conditionals; procedures; and procedures with parameters, lists and tiny database.

Prerequisite: CIS 251 or CIS 252 and completion of 60 college credits.

Offered: As needed.

CIS 416 - Web Design (4)

Students are introduced to concepts, issues and techniques related to designing website interfaces using a variety of tools. Study includes HTML, CSS, and JavaScript. Students cannot receive credit for both CIS 416 and CSCI 416.

Prerequisite: CSCI 157 or CIS 301.

Offered: Spring.

CIS 421 - Networks and Infrastructure (4)

Both computer and systems architecture and communications networks are presented with a focus on the services and capabilities that information technology infrastructure solutions enable in an organizational context.

Prerequisite: CIS 252 or CIS 352 and completion of 60 college credits, or consent of department chair.

Offered: Fall, Spring.

# CSCI - Computer Science

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CSCI 305 - Functional Programming (4)

Functional programming focuses on the design process from problems to well-organized solutions. Topics include, design recipes, functions, lists, self-referential data structures, recursion, lambda functions, and abstraction with practical applications.

Prerequisite: CSCI 201 or CSCI 211 or equivalent, or consent of department chair.

Offered: Fall.

CSCI 309 - Object-Oriented Design (4)

Students will learn fundamental concepts, techniques and principles in object-oriented analysis and design. Topics include the object-oriented design process, interfaces, inheritance, polymorphism, graphical user interfaces and design patterns.

Prerequisite: CSCI 201 or CSCI 211.

Offered: Fall, Spring.

CSCI 312 - Computer Organization and Architecture I (4)

Basic concepts of computer organization, architecture, and machine language programming are examined. Topics include data representation, binary and hexadecimal arithmetic, Boolean algebra, combinatorial and sequential circuits, and registers.

Prerequisite: CSCI 201 or CSCI 211.

Offered: Fall, Spring.

CSCI 313 - Computer Organization and Architecture II (3)

A continuation of CSCI 312. Topics include the central processing unit, memory access, input/output, and floating point operations.

Prerequisite: CSCI 312 and either CSCI 211 or CSCI 221.

Offered: Fall, Spring.

CSCI 324 – Dynamic Web Development (4)

Students are introduced to basic concepts, issues, and techniques related to designing, developing, and deploying websites. Technology will include current practice and tools for server-side programming. Programming projects are required.  Students cannot receive credit for both CIS 324 and CSCI 324.

Prerequisite: CSCI 157 or CIS 301, or consent of department chair.

Offered: Fall.

CSCI 325 - Organization of Programming Language (3)

Programming language constructs are presented, with emphasis on the run-time behavior of programs. Topics include language definition, data types and structures, and run-time considerations.

Prerequisite: CSCI 212 or CSCI 212W or CSCI 315.

Offered: Fall (even years), Spring.

CSCI 401W - Software Engineering (3)

The software development process is examined from initial requirements analysis to operation and maintenance. Student teams develop a software system from requirements to delivery, using disciplined techniques. This is a Writing in the Discipline (WID) course.

Prerequisite: CSCI 212 or CSCI 212W, or CSCI 309 or CSCI 315, and at least two additional computer science courses at the 300-level or above. or consent of department chair.

Offered: Fall (even years), Spring.

CSCI 402 - Cyber Security Principles (4)

Students will explore topics such as software security, secure programming, network security, cryptography and virtual machines. Students will study cyber security history and the legal discourse surrounding the field.

Prerequisite: CSCI 102 and CSCI 157; or CSCI 211.

Offered: Fall, Spring.

CSCI 410 - Digital Forensics (4)

Students will investigate digital forensic science methods and processes and apply them to the discovery, collection and analysis of evidence. Topics include documenting procedures, securing data and providing expert testimony.

Prerequisite: CSCI 402.

Offered: Fall.

CSCI 415 - Software Testing (4)

Software testing principles, concepts, and techniques are presented within the context of the software development life cycle. Topics include software test design, test process, test management, and software testing tools.

Prerequisite: CSCI 212 or CSCI 212W, or CSCI 315, or consent of department chair.

Offered: Spring.

CSCI 416 - Web Design (4)

Students are introduced to concepts, issues and techniques related to designing website interfaces using a variety of tools. Study includes HTML, CSS, and JavaScript. Students cannot receive credit for both CIS 416 and CSCI 416.

Prerequisite: CSCI 157 or CIS 301.

Offered: Spring.

CSCI 422 - Introduction to Computation Theory (4)

Computation theory concepts are introduced with applications to lexical analysis, parsing and algorithms. Topics include formal languages, finite-state automata, pushdown automata, Turing machines and undecidability.

Prerequisite: MATH 436.

Offered: Spring (As needed).