

## Department of Computer Science and Information Systems

### Department Chair:

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**Faculty: Associate Professors:** Tod Amon, Connie W. Nyman;

**Assistant Professors:** Greg Colf, Michael Grady; **Instructors:**

Tabandeh (Tabby) Harraf, Robert Robertson

## Degrees Offered

### Bachelor of Science

- Computer Science Composite
- Computer Science Composite – Forensic Science Emphasis
- Computer Science Composite – GIS Emphasis
- Information Systems Composite

### Associate of Applied Science Degree

- Information Technology
  - Networking/Telecommunications Emphasis
  - Information Technology Emphasis
  - Computer and Information Systems Security Emphasis

### Minor

- Computer Science (Non-Teaching)
- Computer Science Emphasis in Teacher Education
- Computer Science Emphasis in Forensics
- Information Systems (Non-Teaching)

## Department Statement

The Department of Computer Science and Information Systems supports the mission of the University and the College of Computing, Integrated Engineering, and Technology by providing a high quality undergraduate education to students through associate and baccalaureate degree programs.

The department provides students with in-depth skill development in the program discipline areas of computer science and information systems, using state-of-the-art facilities and equipment.

Faculty members strive to provide superior teaching through continued professional development by maintaining memberships in appropriate professional organizations, attending regional and national conferences, receiving counsel from our advisory committee, and updating our knowledge and skills.

All courses to be counted in the computer science and information systems department majors and minors must be passed with a “C” or better.

Students who take a programming course in high school are allowed to substitute any CSIS course in place of CSIS 1400 and are advised to take CSIS 1410 their first semester. Students who need to strengthen their mathematical backgrounds will need to select appropriate courses from MATH 1010, 1050, and 1060 before beginning the required mathematical background courses.

### Computer Literacy Test Out Option

Students have the option to test out of the Computer Literacy Course (CSIS 1000, Introduction to Computer Applications and the

Internet) as part of their General Education requirements. This test will measure students' general knowledge of windows and general information, word processing, spreadsheets, database, presentations, and Internet. There is a fee to take the Computer Literacy Test. Students who want to take advantage of this option should contact their academic advisors for details.

### Bachelor of Science in Computer Science Composite

Recommended for students who seek careers in computer science or who wish to pursue graduate education. This is a SUU composite degree (a minor is not required).

### Bachelor of Science in Computer Science Composite – Forensic Science Emphasis

Recommended for computer science students with an interest in criminal justice who wish to work in the applied field of computer forensics. This is a SUU composite degree (a minor is not required).

### Bachelor of Science in Computer Science Composite - GIS Emphasis

Recommended for students with backgrounds in mathematics and science desiring to work in the applied field of spatial analysis and geographic information systems. This is a SUU composite degree (a minor is not required).

### Bachelor of Science in Information Systems Composite

Recommended for students with an interest in information systems who seek careers in information systems or who wish to pursue graduate education. This is a SUU composite degree (a minor is not required).

### Associate of Applied Science Degree in Information Technology: Networking/Telecommunications Emphasis

Recommended for students with an interest in network administration. This is a SUU 2-year Associate of Applied Science Degree.

### Associate of Applied Science Degree in Information Technology: Information Technology Emphasis

Recommended for students with an interest in developing applications in the Web environment. This is a SUU 2-year Associate of Applied Science Degree.

### Associate of Applied Science Degree in Information Technology: Computer and Information Systems Security Emphasis

Recommended for students with an interest in information systems security. This is a SUU 2-year Associate of Applied Science Degree.

## Degree Requirements

| Computer Science Composite<br>Bachelor of Science  |         |
|--|---------|
| Course Number and Title  | Credits |
| <b>General Education Requirements (see page 103)</b>   |         |
| Core Course Requirements (must take MATH 1210)   | 17-18   |
| Knowledge Areas Requirements (must take CSIS 1010 and two approved courses in the Physical Science area) | 19      |
| <b>University Requirements</b>   |         |
| BS Degree – Math or Science minimum requirement (12 hours)   |         |

| <b>Program Prerequisite (3 hours)</b>                      |            |
|--|------------|
| MATH 1050 and 1060 (prerequisite for MATH 1210)            | 3          |
| <b>CSIS Common Core (36 hours)</b>                         |            |
| CSIS 1400 Fundamentals of Programming                      | 3          |
| CSIS 1410 Object Oriented Programming                      | 3          |
| CSIS 2420 Intro to Algorithms and Data Structures          | 3          |
| CSIS 2600 Data Communications & Networking                 | 3          |
| CSIS 2810 Computer Organization and Architecture           | 3          |
| CSIS 3100 Systems Analysis & Design                        | 3          |
| CSIS 3200 Database Design and Management                   | 3          |
| CSIS 3600 Operating Systems                                | 3          |
| CSIS 3650 Network Security                                 | 3          |
| EET 2750 PC Hardware                                       | 3          |
| EET 2780 Digital Circuits I                                | 3          |
| MATH 1630 Discrete Mathematics                             | 3          |
| <b>CS Core Required (29 hours)</b>                         |            |
| CSIS 3000 Advanced Algorithms and Data Structures          | 3          |
| CSIS 4550 Programming Languages & Computation Theory       | 3          |
| CSIS 4800 CS Capstone Project                              | 3          |
| EET 3780 Applications of Microprocessors                   | 3          |
| MATH 1220 Calculus II                                      | 4          |
| MATH 2270 Linear Algebra                                   | 3          |
| MATH 3700 Probability and Statistics                       | 5          |
| Approved Science Courses to complete 12 credits of Science | 5          |
| <b>CS Major Electives (12 hours)</b>                       |            |
| CSIS 3500 Advanced Computer Architecture                   | 3          |
| EET 3790 Computer Interfacing                              | 3          |
| CSIS 3150 C and C++ Programming                            | 3          |
| CSIS 3400 Graphics Programming                             | 3          |
| CSIS 3700 Computer Forensics                               | 3          |
| CSIS 4700 Internet Forensics & Cyber Security              | 3          |
| Free Electives   | 6          |
| <b>Total Credits, B.S. degree</b>                          | <b>120</b> |

| <b>Computer Science Composite<br/>Forensic Science Emphasis<br/>Bachelor of Science</b> |                |
|---|----------------|
| <b>Course Number and Title</b>  | <b>Credits</b> |
| <b>General Education Requirements (see page 103)</b>                                    |                |
| Core Course Requirements (must take MATH 1050)  | 17-18          |
| Knowledge Areas Requirements (must take CJ 1010, CSIS 1000, and CSIS 1010)              | 19             |
| <b>University Requirements</b>  |                |
| BS Degree – Math or Science minimum requirement (12 hours)                              |                |
| <b>Computer Science and Criminal Justice Core (15 hours)</b>                            |                |
| CSIS 1400 Fundamentals of Programming   | 3              |
| CSIS 2810 Computer Organization and Architecture  | 3              |

| CJ 1340 Criminal Investigations  | 3          |
|--|------------|
| CJ 1350 Introduction to Forensic Science   | 3          |
| CJ 2350 Laws of Evidence   | 3          |
| <b>Foundation Courses (36 hours)</b>   |            |
| CSIS 1410 Object Oriented Programming  | 3          |
| CSIS 2420 Intro to Algorithms and Data Structures  | 3          |
| MATH 1040 Statistics   | 4          |
| MATH 1630 Discrete Mathematics   | 3          |
| CJ 3100 Advanced Criminalistics  | 3          |
| Student's choice of a two semester sequence: BIOL (1030, 1040) (1050, 1060) OR CHEM (1210, 1215) (1220, 1225) OR PHYS (2210, 2215, 2230) (2220, 2225, 2260)  | 8-12       |
| 12 Credit hours of electives in CSIS or forensic related classes in the College of Science or the Dept. of Criminal Justice. Courses must be approved by the CIET advisor. Most of these electives will need to be upper division to satisfy the required 40 hours of upper division work. | 12         |
| <b>Computer Science - Forensic Core (28 hours)</b>   |            |
| CSIS 3000 Advanced Algorithms and Data Structures  | 3          |
| CSIS 3500 Advanced Computer Architecture   | 3          |
| CSIS 3600 Operating System   | 3          |
| CSIS 3700 Computer Forensics   | 3          |
| CSIS 4700 Internet Forensics and Cyber Security  | 3          |
| CSIS 3994 Undergrad Research in ComputerForensics  | 4          |
| CSIS 4893 Internship   | 3          |
| 6 credit hours of CSIS electives at 3000-4000 levels. CCJET advisor must pre-approve student's selection of all electives.   | 6          |
| Free Electives   | 5          |
| <b>Total Credits, B.S. degree</b>  | <b>120</b> |

| <b>Computer Science Composite<br/>GIS Emphasis<br/>Bachelor of Science</b> |                |
|--|----------------|
| <b>Course Number and Title</b>   | <b>Credits</b> |
| <b>General Education Requirements (see page 103)</b>                       |                |
| Core Course Requirements (must take MATH 1050)                             | 17-18          |
| Knowledge Areas Requirements (must take CSIS 1000 and CSIS 1010)           | 19             |
| <b>University Requirements</b>   |                |
| BS Degree – Math or Science minimum requirement (12 hours)                 |                |
| <b>Program Prerequisite (3 hours)</b>                                      |                |
| MATH 1060 Trigonometry (prerequisite for Math 1210 Calculus I)             | 3              |
| <b>Computer Science and Information Systems Core (12 hours)</b>            |                |
| CSIS 1400 Fundamentals of Programming                                      | 3              |
| CSIS 2810 Computer Organization and Architecture                           | 3              |
| CSIS 2000 Web Development  | 3              |
| CSIS 2600 Data Communications & Networking                                 | 3              |
| <b>Foundation Courses (36-40 hours)</b>                                    |                |
| CSIS 1410 Object Oriented Programming                                      | 3              |

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|   |            |
|---|------------|
| CSIS 2420 Intro to Algorithms and Data Structures   | 3          |
| MATH 1040 Statistics  | 4          |
| MATH 1210 Calculus I  | 4          |
| MATH 1630 Discrete Mathematics  | 3          |
| Student's choice of a two semester sequence: BIOL (1030, 1040) (1050, 1060) OR CHEM (1210, 1215) (1220, 1225) OR PHYS (2210, 2215, 2230) (2220, 2225, 2260) | 8-12       |
| GEOG 2900 GPS Theory, Techniques and Methods  | 2          |
| GEOG 3500 Intro to Cartography  | 3          |
| GEOG 3505 Intro to Cartography Lab  | 1          |
| GEOG 3550 Principles of GIS   | 3          |
| GEOG 3555 Principles of GIS Lab   | 2          |
| <b>Major Requirements – GIS (27 hours)</b>  |            |
| CSIS 3000 Advanced Algorithms and Data Structures   | 3          |
| CSIS 3500 Advanced Computer Architecture  | 3          |
| CSIS 3993 Undergraduate Research  | 3          |
| GEOG 4150 Advance GIS Analysis Methods Lab  | 3          |
| GEOG 4500 GIS Research Project (Capstone)   | 3          |
| 6 credit hours of Mathematics or CSIS electives at 3000 – 4000 (advisement required)  | 6          |
| 6 credit hours of electives related to applications of GIS at 3000 - 4000 level (advisement required)   | 6          |
| Free Electives  | 6          |
| <b>Total Credits, B.S. degree</b>   | <b>120</b> |

|  |            |
|--|------------|
| ACCT 2020 Managerial Accounting                    | 3          |
| MATH 1100 Business Calculus                        | 3          |
| CSIS 2000 Web Development                          | 3          |
| CSIS 2620 Network Administration I                 | 3          |
| CSIS 2660 Network Service & Support                | 3          |
| CSIS 3050 Environments of Information Systems      | 3          |
| CSIS 4810 IS Capstone Project                      | 3          |
| MGMT 3180 Management and Organizations             | 3          |
| <b>IS Business Electives (6 Hours)</b>             |            |
| FIN 3250 Managerial Finance I                      | 3          |
| MGMT 3050 International Business                   | 3          |
| MGMT 4100 Organizational Behavior & Leadership     | 3          |
| MKTG 3010 Marketing Principles                     | 3          |
| <b>IS Major Electives (9 Upper-Division Hours)</b> |            |
| CSIS 3150 C and C++ Programming                    | 3          |
| CSIS 3620 Network Administration II                | 3          |
| CSIS 3660 Network Design & Implementation          | 3          |
| CSIS 3700 Computer Forensics                       | 3          |
| CSIS 4700 Internet Forensics & Cyber Security      | 3          |
| CSIS 4750 e-Business Systems                       | 2          |
| EET 2730 Computer Networking I                     | 3          |
| EET 2740 Computer Networking II                    | 3          |
| <b>Electives (6 Upper-Division Hours)</b>          |            |
| <b>Total Credits, B.S. degree</b>                  | <b>120</b> |

| Information Systems Composite Bachelor of Science          |         |
|--|---------|
| Course Number and Title                                    | Credits |
| <b>General Education Requirements (see page 103)</b>       |         |
| Core Course Requirements (must take MATH 2040)             | 17-18   |
| Knowledge Areas Requirements (must take CSIS 1010)         | 19      |
| <b>University Requirements</b>                             |         |
| BS Degree – Math or Science minimum requirement (12 hours) |         |
| <b>CSIS Common Core Required (36 Hours)</b>                |         |
| CSIS 1400 Fundamentals of Programming                      | 3       |
| CSIS 1410 Object Oriented Programming                      | 3       |
| CSIS 2420 Intro to Algorithms and Data Structures          | 3       |
| CSIS 2600 Data Communications & Networking                 | 3       |
| CSIS 2810 Computer Organization and Architecture           | 3       |
| CSIS 3100 Systems Analysis & Design                        | 3       |
| CSIS 3200 Database Design and Management                   | 3       |
| CSIS 3600 Operating Systems                                | 3       |
| CSIS 3650 Network Security                                 | 3       |
| EET 2750 PC Hardware                                       | 3       |
| EET 2780 Digital Circuits I                                | 3       |
| MATH 1630 Discrete Mathematics                             | 3       |
| <b>IS Core Required (27 Hours)</b>                         |         |
| ACCT 2010 Accounting Principles                            | 3       |

| Information Technology All Emphases Associate of Applied Science |         |
|--|---------|
| Course Number and Title  | Credits |
| <b>General Education Requirements (see page 103)</b>             |         |
| Core Course Requirements (must take MATH 2040)                   | 12      |
| Knowledge Areas Requirements (must take CSIS 1010)               | 9       |
| <b>Common Core (27 Hours)</b>                                    |         |
| CSIS 1400 Fundamentals of Programming                            | 3       |
| CSIS 1410 Object Oriented Programming                            | 3       |
| CSIS 2420 Intro to Algorithms and Data Structures                | 3       |
| CSIS 2500 Computer Applications                                  | 3       |
| CSIS 2600 Data Communications & Networking                       | 3       |
| CSIS 3100 Systems Analysis & Design                              | 3       |
| CSIS 3200 Database Design and Management                         | 3       |
| CSIS 3650 Network Security                                       | 3       |
| EET 2750 PC Hardware   | 3       |
| <b>Select one of the three following emphases:</b>               |         |
| <b>Networking/Telecommunications Emphasis (18 Hours)</b>         |         |
| CSIS 2620 Networking Administration I                            | 3       |
| CSIS 2660 Network Service & Support                              | 3       |
| CSIS 3600 Operating Systems                                      | 3       |

|   |           |
|---|-----------|
| CSIS 3620 Network Administration II   | 3         |
| CSIS 3660 Network Design & Implementation   | 3         |
| EET 2730 Computer Network I   | 3         |
| <b>Information Technology Emphasis (18 hours)***</b>  |           |
| ACCT 2010 Accounting Principles   | 3         |
| ART 2210 Digital Imaging  | 3         |
| ART 3230 Graphic Design I   | 3         |
| CSIS 2000 Web Development   | 3         |
| CSIS 2050 Web Server Management   | 3         |
| CSIS 4750 e-Business Systems  | 3         |
| ***The students must pass at least one of the MOUS certification examinations such as Excel, Word, Access, or PowerPoint. |           |
| <b>Computer and Information Systems Security Emphasis (18 Hours)</b>  |           |
| CSIS 2620 Network Administration I  | 3         |
| CSIS 3600 Operating Systems   | 3         |
| CSIS 3660 Network Design & Implementation   | 3         |
| CSIS 4700 Internet Forensics & Cyber Security   | 3         |
| EET 2730 Computer Networking I  | 3         |
| EET 2740 Computer Networking II   | 3         |
| <b>Total Credits (either emphasis)</b>  | <b>64</b> |

| <b>Computer Science Minor (Non-Teaching)</b>      |                |
|---|----------------|
| <b>Course Number and Title</b>                    | <b>Credits</b> |
| <b>Required Courses (21 hours)</b>                |                |
| CSIS 1400 Fundamentals of Programming             | 3              |
| CSIS 1410 Object Oriented Programming             | 3              |
| CSIS 2420 Intro to Algorithms and Data Structures | 3              |
| CSIS 2810 Computer Organization and Architecture  | 3              |
| CSIS 3000 Advanced Algorithms and Data Structures | 3              |
| CSIS 3600 Operating Systems                       | 3              |
| Elective (any approved CSIS course)               | 3              |
| <b>Total Credits</b>                              | <b>21</b>      |

| <b>Computer Science Minor Emphasis in Teacher Education</b> |                |
|---|----------------|
| <b>Course Number and Title</b>                              | <b>Credits</b> |
| <b>Required Courses (21 Hours)</b>                          |                |
| CSIS 1400 Fundamentals of Programming                       | 3              |
| CSIS 1410 Object Oriented Programming                       | 3              |
| CSIS 2420 Intro to Algorithms and Data Structures           | 3              |
| CSIS 2810 Computer Organization and Architecture            | 3              |
| CSIS 2000 Web Development                                   | 3              |
| CSIS 4900 Methods in CS and IS Education                    | 3              |
| Elective (any approved CSIS course)                         | 3              |
| <b>Total Credits</b>  | <b>21</b>      |

| <b>Computer Science Minor Emphasis in Forensics</b> |                |
|---|----------------|
| <b>Course Number and Title</b>                      | <b>Credits</b> |
| <b>Required General Education Course (3 Hours)</b>  |                |
| CJ 1010 Introduction to Criminal Justice            | 3              |
| <b>Required Courses (18 Hours)</b>                  |                |
| CSIS 1400 Fundamentals of Programming               | 3              |
| CSIS 1410 Object Oriented Programming               | 3              |
| CSIS 2420 Intro to Algorithms and Data Structures   | 3              |
| CSIS 3700 Computer Forensics                        | 3              |
| CSIS 4700 Internet Forensics and Cyber Security     | 3              |
| CJ 2350 Laws of Evidence                            | 3              |
| <b>Total Credits</b>                                | <b>21</b>      |

| <b>Information Systems Minor (Non-Teaching)</b> |                |
|---|----------------|
| <b>Course Number and Title</b>                  | <b>Credits</b> |
| <b>Required Courses (21 hours)</b>              |                |
| CSIS 2000 Web Development                       | 3              |
| CSIS 2500 Computer Applications                 | 3              |
| CSIS 2600 Data Communications & Networking      | 3              |
| CSIS 3050 Environments of Information Systems   | 3              |
| CSIS 3100 Systems Analysis & Design             | 3              |
| CSIS 3200 Database Design and Management        | 3              |
| Elective (any approved CSIS course)             | 3              |
| <b>Total Credits</b>                            | <b>21</b>      |