Computer Science

The Computer Science Department offers three specializations for the Master of Science: Computer Science (CS), Database Systems (DB), and Software Engineering (SE).

Numerous local and regional companies and governmental agencies employ computer science students. The department annually awards several scholarships, fellowships, and out-of-state tuition waivers to new and returning students. The department also has limited opportunities for teaching/research assistantships for new and returning students. Please see the departmental website for additional information.

Admission Requirements

In addition to the University graduate admission requirements described in the Admissions section (http://catalog.uwf.edu/graduate/admissions) of the catalog, the department bases decisions for regular admission on a holistic review of credentials in which the following criteria are used to assess the potential success of each applicant:

- Submission of one of the following graduate admission tests:
  - Graduate Record Examination (GRE)
  - Miller Analogies Test (MAT)
- Undergraduate cumulative GPA
- Undergraduate degree major
- The applicant's motivation for pursuit of a Master of Science degree, extent of related work experience in the field, and future goals related to the attainment of a M.S. degree described in a letter of intent written by the applicant
- Indication of the applicant's ability as reflected in three letters of recommendation from individuals who can evaluate an applicant's academic potential to succeed in a graduate program

Computer Science Specialization

The Computer Science specialization offers a flexible and innovative curriculum that blends theoretical foundations of computer science with state-of-the-art computing technologies. Students starting this specialization typically have an undergraduate degree in Computer Science but may come from another scientific discipline. The program provides students with knowledge and skills in algorithmic programming, software development, and research of computational methods for creating innovative solutions. This specialization offers two focus areas in cybersecurity and data analytics, as well as other advanced topics in Computer Science. The specialization prepares students for doctoral studies and careers in cybersecurity, data analytics, and other computing fields.

The program can be completed face-to-face or fully online. All courses are offered using Elluminate, a synchronous delivery tool, that enables distance students to attend live lectures and facilitates live interaction between the instructor and online students. For distance students to succeed in our hybrid program, it is strongly recommended that they attend lectures synchronously via Elluminate and take advantage of opportunities for interaction with their instructors and peers.

All courses must be completed with a grade of “C” or better.

- CIS 6415 - Advanced Computer Systems and Networks (3)
- COP 6025 - Advanced Programming Languages (3)
- COP 6727 - Advanced Database Systems (3)
- COT 5930 - Computer Science Seminar (3)
- Choose 12 credit hours from:
- Cybersecurity focus:
  - CIS 6394 - Digital Forensics (3)
  - CNT 6519 - Wireless Network Security (3)
- Data Analytics focus:
  - CAP 5771 - Data Mining (3)
  - CAP 6782C - Big Data Analytics in the Cloud (3)
- General CS topics:
  - CAP 5600 - Introduction to Artificial Intelligence (3)
  - CAP 5701 - Computer Graphics and Simulation (3)
  - 5000/6000 level advisor approved electives (6)
- Choose one of the following:
  - CIS 6971 - Thesis (3)
  - COT 6931 - Computer Science Project (normally 3 sh in two consecutive semesters) (3)

Total Hours: 30

Database Systems Specialization

Students entering the Database Systems specialization may have an undergraduate degree in CS or CIS but may also come from another discipline. A graduate of this specialization is a database specialist, prepared to plan, configure, implement and maintain large database systems. He/she will have significant programming as well as database programming skills, and may also be familiar with a specific problem domain, for example, developing and working with medical databases, biological databases, chemical databases, etc. He/she will also be able to identify and utilize tools to be able to work with the vast amounts of information provided by large data groups. Graduates of this specialization may consider continuing on to doctoral studies. All courses must be completed with a grade of “C” or better.

- COP 5007 - Software Engineering Foundations: Java Programming (3)
- CAP 5771 - Data Mining (3)
- CEN 6016 - Software Engineering Process (3)
- CEN 6095 - Software Engineering Practice and Tools (3)
- COP 5725 - Database Systems (3)
- COP 5775 - Database Administration (3)
- COP 6727 - Advanced Database Systems (3)
- 5000/6000 level, advisor approved electives (6)
- Choose one of the following:
  - CIS 6971 - Thesis (3)
  - COT 6931 - Computer Science Project (normally 3 sh in two consecutive semesters) (3)

Total Hours: 30

Software Engineering Specialization

Students entering the Software Engineering specialization may have an undergraduate degree in CS or CIS but may also come from another discipline. A graduate of this specialization is a system specialist, prepared to perform various activities within a software lifecycle such as requirements analysis, design, implementation, testing, maintenance, project management, process improvement, quality assurance, etc. in support of the development of high-quality software.
systems that meet client needs. He/she may also be deeply familiar with a specific problem domain (e.g. medical software, chemistry, data acquisition systems, computer games) and with software development issues associated with that domain. Graduates are also prepared to continue on to doctoral studies.

Representative electives for Software Engineering students include courses regarding Software Specifications, Software Design, Software Testing and Verification, Capability Maturity Model Integration (CMMI) in Software Engineering, Data Mining, and Database Administration. All courses must be completed with a grade of "C" or better.

COP 5007 Software Engineering Foundations: Java Programming 3
CEN 6016 Software Engineering Process 3
COP 5725 Database Systems 3
CEN 6095 Software Engineering Practice and Tools 3
CEN 6064 Software Design 3
5000/6000 level advisor approved electives 9
Choose one: 6
CIS 6971 Thesis
COT 6931 Computer Science Project (normally 3 sh in consecutive semesters)

Total Hours 30

Data Science Certificate

Method of Instruction: Online
Semester Hours: 15

The Certificate in Data Science combines advanced computer programming and database system architectures with statistical analyses and modeling. This program is designed to address the need for a skill set that includes programming, computational, and analytical skills, all of which is applicable to business, healthcare, as well as many other fields.

Admission Requirements:
Participants must have a B.S. degree in computer science, the mathematical sciences, or a related field with a grade point average of 3.0 or higher. Students will be non-degree seeking, and hence will not require the GRE.

Program Requirements:
Students admitted to the certificate program must successfully complete the five courses (for a total of 15 semester hours) listed below earning a grade of "C" or better in each course, and secure a combined grade point average of 3.0 or higher.

COP 5007 Software Engineering Foundations: Java Programming 3
COP 5725 Database Systems 3
CAP 5771 Data Mining 3
STA 5176 Statistical Modeling 3
MAP 5471 Advanced Probability and Inferences 3

Total Hours 15

Students are expected to complete the program in at most 3 semesters.

Database Systems Certificate

Department: Computer Science
Method of Instruction: Online
Semester Hours: 12

This certificate program is designed to provide both theory and practical knowledge in database design, development and implementation, advanced database concepts, database administration, as well as data mining. In-depth practice in the use of Structure Query Language (SQL) will also be provided. It will prepare one to be a database professional, or work in any other information system career in which knowledge of capturing, storing, retrieving, organizing, and analyzing information is important. The departmental certificate application, available on the Computer Science website, should be submitted before the drop/add period of the semester of completion. All courses must have been completed within 5 years of receipt of application with a grade of "C" or better.

Choose one of the following Programming prerequisites: 3
COP 5007 Software Engineering Foundations: Java Programming
COP 2253 Programming Using Java
COP 2334 Programming Using C++
CGS 3464 Programming Using Visual Basic for Non-Majors

Required course:
COP 5725 Database Systems 3

Choose two of the following electives: 6
COP 6727 Advanced Database Systems
CAP 5771 Data Mining
COP 5775 Database Administration

Total Hours 12

Graduate Geospatial Cybersecurity Certificate

Department: Computer Sciences
Semester hours: 22

Program Requirements:
In addition to meeting general UWF requirements, participants must successfully complete the prescribed courses earning a grade of "C" or better in each course, and secure a combined grade point average of 3.0 or higher for the courses required by the certificate.

The certificate is composed of seven courses for a total of 22 semester hours, as shown below.

Required Courses (Common Core) (22 hrs):
COP 5007 Software Engineering Foundations: Java Programming 3
GIS 5050+L Geographic Information Systems (+Lab) 4
CIS 6379 Applied Information Security 3

Total Hours 22
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<th>Course</th>
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<td>GIS 5100</td>
<td>Applications in Geographic Information Systems</td>
<td>3</td>
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<tr>
<td>COP 5725</td>
<td>Database Systems</td>
<td>3</td>
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<td>CAP 5771</td>
<td>Data Mining</td>
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<td>GIS 5935</td>
<td>Special Topics in Geographic Science</td>
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