

# DEPARTMENT OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

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Department website: <https://www.uwplatt.edu/department/computer-science-software-engineering> (<https://www.uwplatt.edu/department/computer-science-software-engineering/>)

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## ABOUT THE DEPARTMENT AND MAJORS

The UW-Platteville Department of Computer Science and Software Engineering offers three majors: Computer Science, Cybersecurity, and Software Engineering and two minors: Cybersecurity and Computer Science. Additionally, it offers interdisciplinary CS+X programs that allow students to learn computing skills along with the knowledge of an application discipline. Computer Science is about designing, implementing and evaluating computing systems. Cybersecurity is concerned with preventing computer networks, devices, and data from unauthorized access and ensuring confidentiality, integrity, and availability of information to authorized users. Software engineering is the application of sound engineering principles and techniques to analysis, design, development, testing and management of software systems. Our programs prepare students for careers in the rapidly expanding information technology sector. Graduates are prepared for such positions as computer scientists, computer programmers, software engineers, and cyber security analysts.

## MAJORS

- Applied Computing (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/applied-computing-bs/>)\*
- Computer Science (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/>)
  - Interdisciplinary CS+X Programs (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#cs+x>)
    - CS + Business (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#cs+business>)
    - CS + Chemistry (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#chemistry>)
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    - CS + Psychology (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#psychology>)
    - CS + Supply Chain Management (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#supply-chain-management>)
- Cybersecurity (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/cybersecurity-bs/>)
- Software Engineering (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/software-engineering-bs/>)

\* Distance program offered online in collaboration with other University of Wisconsin institutions.

## MINORS

- Computer Science (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/minor-computer-science/>)

- Cybersecurity (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/minor-cybersecurity/>)

## APPLIED COMPUTING

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In nearly every industry, businesses can no longer operate without skilled, perceptive IT professionals to drive process and create connections. With the University of Wisconsin online Bachelor of Science in Applied Computing, you can be the problem solver who makes things possible—for your company and your career.

A Bachelor of Science in Applied Computing tells employers that you're skilled in both the theory behind computer science, as well as its direct application. Plus, it highlights your solid foundation in the business and communication skills that complement your technical expertise. In your courses you'll participate in projects that reflect real-life business situations. You will gain the knowledge required to solve an organization's everyday information technology issues.

The fully online program is in collaboration with UW-Milwaukee, UW-Oshkosh, UW-River Falls, and UW-Stevens Point.

## COMPUTER SCIENCE

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## COMPUTER SCIENCE MISSION STATEMENT

The mission of the Computer Science program is to provide a quality computer science education with significant hands-on and laboratory experience that will enable our graduates to practice their profession with proficiency and integrity.

## COMPUTER SCIENCE GOALS

**Graduates are expected to have:**

1. the ability to apply the principles of analysis and design to software development
2. knowledge of data structures, databases, algorithms, computer architecture and operating systems
3. the ability to develop effective software tests at the unit and system level
4. knowledge about the tools and environments used for software development
5. written and oral communication skills, ethics and professionalism to function effectively on software development teams, and in society in general
6. the ability to engage in lifelong learning and recognize its importance

## COMPUTER SCIENCE OUTCOMES

1. **Foundation:** Graduates will have a solid foundation in computer science. These graduates will be able to apply this fundamental knowledge to both their immediate professional software development tasks, as well as to acquiring new professional skills throughout their lifetime.
2. **Development:** Graduates will be able to engage in effective software development practices over the entire system lifecycle. This includes design, implementation and testing.
3. **Professionalism:** Graduates will conduct themselves ethically, honestly and professionally in all work environment activities. These activities include all interactions with employers, team members and peers, as well as customers.
4. **Presentation:** Graduates will be capable of effective written and oral communication. Graduates will be capable of preparing and publishing the necessary project documents involved in the specification, design, testing and deployment of software. Graduates will also be capable of actively participating in customary project discussions, walk-throughs, reviews and inspections.
5. **Growth:** Graduates will be able to provide themselves with lifelong learning capabilities, such as the ability to learn new tools, study new language processes and generally adapt to new surroundings throughout their careers.

## COMPUTER SCIENCE MAJOR

All Computer Science majors must complete the core requirements and either select an emphasis (and complete the requirements of their chosen emphasis) or choose the no-emphasis option and complete its additional requirements.

## ACADEMIC STANDARDS

All Computer Science majors must earn at least a “C-” in each computer science, cybersecurity, and software engineering course listed as a requirement in the emphasis selected and each computer science course listed in the core requirements. Computer Science majors must earn a “D” or better in all corequisites unless otherwise stipulated by the offering department. Students must have a GPA of 2.00 or higher in all computer science and software engineering courses.

## CYBERSECURITY

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### CYBERSECURITY MISSION STATEMENT

The mission of the Cybersecurity program is to provide a quality cybersecurity education with significant hands-on and laboratory experience that enables our graduates to practice their profession with proficiency and integrity.

### CYBERSECURITY PROGRAM EDUCATIONAL OBJECTIVES

**Graduates of the program will:**

1. Have a cybersecurity mindset needed to identify, assess and manage cyber risks
2. Be able to use cybersecurity principles and practices to design and implement solutions for real world problems
3. Recognize professional responsibilities and make informed judgments in cybersecurity practice based on legal and ethical principles.

### CYBERSECURITY STUDENT OUTCOMES

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply security principles and practices to maintain operations in the presence of risks and threats.

## SOFTWARE ENGINEERING

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University of Wisconsin Platteville's B.S. program in Software Engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org> (<https://www.abet.org/>), under the commission's General Criteria and the Program Criteria for Software and Similarly Named Engineering Programs.

### SOFTWARE ENGINEERING MISSION STATEMENT

The mission of the Software Engineering program is to provide a quality software engineering education with significant hands-on and laboratory experience that will enable graduates to practice their profession with proficiency and integrity.

### SOFTWARE ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

Within two to five years after graduation, our graduates are expected to

- (1) proficiently adapt to evolving industry-standard technology frameworks to further grow their career through self-learning.
- (2) be effective team members to promote a diverse and inclusive environment to enhance innovation and improve problem-solving ability.

(3) demonstrate expanded leadership by providing clear objectives, incremental goals, constructive feedback with oral and written communication, and a positive and safe learning environment to their peers.

(4) maintain quality standards and ethical integrity in high-pressure situations by adhering to IEEE and ACM standards and advocating to leadership for ethical standards and ethical justification of decisions.

## SOFTWARE ENGINEERING STUDENT OUTCOMES

By graduation, students in our program are expected to attain the following student outcomes:

- (1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- (2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- (3) an ability to communicate effectively with a range of audiences
- (4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- (5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- (6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- (7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## ACADEMIC STANDARDS

Software Engineering majors must earn a "C-" or better in all required software engineering and computer science courses. Software Engineering majors must earn a C- or better in MATH 2730 and a "D" or better in all other corequisites unless otherwise stipulated by the offering department. For example, a "D" would satisfy the software engineering requirement for computer science courses for which there is an option: COMPUTER 3030, COMPUTER 3520, COMPUTER 3630 and COMPUTER 3920. A Software Engineering major may repeat any given engineering course only one time. Students must have a GPA of 2.00 or higher in all software engineering and computer science courses.

## BACHELOR OF SCIENCE DEGREE

Course	Title	Credits
Total for graduation		120
Major		90-91

## MAJORS

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- Computer Science Major, B.S. (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/>)
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    - CS + Supply Chain Management (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/#supply-chain-management>)

- Cybersecurity Major, B.S. (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/cybersecurity-bs/>)
- Software Engineering Major, B.S. (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/software-engineering-bs/>)

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## MINORS

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- Cybersecurity Minor (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/minor-cybersecurity/>)

## CERTIFICATE

- Interdisciplinary Engineering Design Certificate (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/mechanical-industrial-engineering/interdisciplinary-engineering-design-certificate/>)

## FOUR-YEAR PLANS

- Computer Science Major, B.S., Four-Year Plan (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/four-year-plan/>)
- CS + Business, B.S., Four-Year Plan (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/csbusiness-four-year-plan/>)
- CS + Supply Chain Management, B.S., Four-Year Plan (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/computer-science-bs/cssupply-chain-management-four-year-plan/>)
- Cybersecurity Major, B.S., Four-Year Plan (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/cybersecurity-bs/four-year-plan/>)
- Software Engineering Major B.S., Four-Year Plan (<http://catalog.uwplatt.edu/undergraduate/engineering-mathematics-science/computer-science-software-engineering/software-engineering-four-year-plan/>)

## FACULTY AND LECTURERS

Additional information about the Faculty and Lecturers below may be found in the Faculty and Academic Staff (<http://catalog.uwplatt.edu/faculty-academic-staff/>) section of this catalog.

Additional information about the Faculty for Applied Computing may be found here (<https://appliedcomputing.wisconsin.edu/applied-computing-program/applied-computing-faculty/>).

Ashrafuzzaman, Mohammad

Cui, Defu

Shi, Yan

Wu, Yanwei

Yue, Songqing (Joshua)