

# COMPUTING APPLICATIONS CERTIFICATE

The Certificate in Computing Applications is a cross-disciplinary course of study in the Colleges of Liberal Arts and Sciences, Engineering, and Business. It is designed for undergraduates not already enrolled in majors in Computer Science, Software Engineering, or Computer Engineering who wish to enhance their degree and employment possibilities by adding expertise in computing applications. The certificate program focuses on teaching students the essential skills required to develop and use computing applications in their subject domains. This certificate program will help students to be successful in today's workplace, ensuring they have the basic knowledge of programming languages and computer systems needed to enhance their employment opportunities.

The certificate program is offered jointly among the three colleges and their respective departments housing the majors of computer science, computer engineering, software engineering, and management information systems.

The program consists of 9 credit hours selected from the core and 12 credits hours in electives.

## Enrollment in the certificate

Students should fill the form at <http://www.registrar.iastate.edu/sites/default/files/uploads/forms/Urequest.pdf> and bring it to Computer Science Advising Center, 1200 Communications Building.

## Requirements

- 21 required credits.
- Courses applied to the certificate may not be taken on a pass not-pass basis.
- At least 9 of the credits taken at Iowa State University must be in courses numbered 300 or above.
- A minimum of 9 credits used for the certificate may not be used to meet any other department, college, or university requirement for the baccalaureate degree except to satisfy the total credit requirement for graduation and to meet credit requirements in courses numbered 300 or above.
- A student may not receive both an undergraduate major and a certificate of the same name.
- For students earning an Iowa State University baccalaureate degree, a certificate is awarded concurrent with or after the Iowa State University baccalaureate degree.
- A certificate is not awarded until baccalaureate requirements are finished.

- After receiving a baccalaureate degree from any accredited institution, a student may enroll at Iowa State University to earn a certificate.
- A cumulative grade point average of at least 2.00 is required in courses taken at ISU for a certificate.
- A notation of completed certificate will be made on the transcript.

## Part I - Core 9-10 Credits

Students will complete either Sequence 1 or Sequence 2		
SEQUENCE 1		9-10 Credits
COM S 107	Windows Application Programming	3-4
or COM S 127	Introduction to Computer Programming	
or COM S 207	Fundamentals of Computer Programming	
COM S 106	Introduction to Web Programming	3
or COM S 113	Introduction to Spreadsheets and Databases	
COM S 252	Linux Operating System Essentials	3
or DS 201	Introduction to Data Science	
SEQUENCE 2		10 Credits
COM S 227	Object-oriented Programming	4
COM S 228	Introduction to Data Structures	3
COM S 252	Linux Operating System Essentials	3
or DS 201	Introduction to Data Science	

## Part II - Electives 12 Credits

### Designated Electives for the Certificate

Students will choose one elective course from the following list of courses and are responsible for satisfying the course pre-requisites of the elective selected.

- CPR E 230 Cyber Security Fundamentals
- BC BIO 322 Introduction to Bioinformatics and Computational Biology
- L A 211 Digital Design Methods for Landscape Architecture
- C R P 251 Fundamentals of Geographic Information Systems
- STAT 301 Intermediate Statistical Concepts and Methods
- PSYCH 301 Research Design and Methodology
- SOC 302 Research Methods for the Social Sciences
- ECON 207 Applied Economic Optimization
- Any course at 300 level or above in Computer Science (ComS), Computer Engineering (CprE), Management Information Systems (MIS), or Software Engineering (SE)

The remaining 9 credits of electives are intended to allow students to develop further computing applications expertise especially within their major. These 9 elective credits can be advanced courses in their major, courses on the above electives list, or any other coursework approved by the Computer Science Adviser on the "request for undergraduate certificate." At least 9 of the 12 elective credits must be in courses numbered 300 or above and taken at Iowa State University.