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 credit hours in electives.

Enrollment in the certificate
Students should fill the form at https://www.registrar.iastate.edu/sites/default/files/uploads/forms/Curriculum%20Change%20Form%201%2021.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 3000 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 3000 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

<table>
<thead>
<tr>
<th>Sequence 1</th>
<th>Credits</th>
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<tbody>
<tr>
<td>COMS 1070</td>
<td>3</td>
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<td>or COMS 1270</td>
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<td>or COMS 2070</td>
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<td>COMS 1060</td>
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<td>or COMS 1130</td>
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<tr>
<td>COMS 2520</td>
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<td>or DS 2010</td>
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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.

- CPRE 2300 Cyber Security Fundamentals
- BCBIO 3220 Introduction to Bioinformatics and Computational Biology
- LA 2110 Digital Design Methods for Landscape Architecture
- CRP 2510 Fundamentals of Geographic Information Systems
- STAT 3010 Intermediate Statistical Concepts and Methods
- PSYCH 3010 Research Design and Methodology
- SOC 3020 Research Methods for the Social Sciences
- ECON 2070 Applied Economic Optimization
- Any course at 3000 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 Advisor on the "request for undergraduate
certificate." At least 9 of the 12 elective credits must be in courses
numbered 3000 or above and taken at Iowa State University.