3 hours, 3 credits.

The nature, power and limits of the computer and computing. The components of the computer. Information representation. Computer networks, the Internet, and the World Wide Web. The nature of algorithms, problem-solving, and computer programming. Feasibility and computability. Computer and network security and privacy. (Not open to students who are enrolled in, or have completed, any course in Computer and Information Science, other than CIS 5.2, numbered 1.0 or higher with a grade of C or higher, or who have completed Core Studies 5 or 5.1.)

Prerequisites; none

Common Goals Addressed by Core Course:

1. To develop the ability to think critically and creatively, to reason logically, and to reason quantitatively. *(includes OARM Goal 16)*

2. To understand the development and workings of modern societies in an interdependent world. *(includes OARM Goal 6)*

3. To acquire the tools that are required to understand and respect the natural universe. *(includes OARM Goal 5)*

4. To understand what knowledge is and how it is acquired by the use of differing methods in different disciplines. *(includes OARM Goal 17)*

5. To produce informed and responsible citizens. *(includes OARM Goal 8)*

6. To establish a foundation for life-long learning and the potential for leadership. *(includes OARM Goal 30)*

Objectives of Core Course:

1. Students will be able to describe the nature, power and limits of information technology *(from OARM Goal 16)*

2. Students will be able to explain the structure of the Internet and the World Wide Web and the roles of the fundamental protocols that drive them; *(from OARM Goal 6 & 16—knowledge goal)*

3. Students will be able to create simple Web pages, including interactive elements. *(from OARM Goal 6 & 16—knowledge goal)*
4. Students will be able to identify basic components of the computer, describe their function, describe the different forms of data and how they are represented, and describe how data flows among the different parts of the computer. *(from OARM Goal 6 & 16—knowledge goal)*

5. Students will be able to define “algorithm,” provide algorithms for solving simple problems, and explain the process by which algorithms are rendered executable by a program. *(from OARM Goal 5 & 16—knowledge goal)*

6. Students will be able to identify some problems that are not feasible and/or computable. *(from Goal 5 & 16—knowledge goal)*

7. Students will be able to explain criteria for evaluating data and their sources *(from OARM Goal 17)*

8. Students will be able to describe plagiarism and how to avoid it and to make determination regarding their personal online privacy and security. *(from OARM Goal 8—knowledge goal)*

9. Students will be able to demonstrate personal responsibility and forthrightness in principle and action. *(from OARM Goal 30)*

**Outcomes for this Core Course:**

1. Students describe the nature, power and limits of information technology through their writing, oral presentation, and/or computing experiments.

2. Students create computer-based solutions to problems through the use of Web-based resources.

3. Students create simple Web pages, including interactive elements.

4. Students identify basic components of the computer, describe their function, describe the different forms of data and how they are represented, and describe how data flows among the different parts of the computer.

5. Students write simple programs to solve a problem described in English.

6. Students identify some problems that are not feasible and/or computable.

7. Given a topic, students will research the topic on the Web and determine which sources have higher significance and authority.
8. Students identify cases of plagiarism.

9. Students complete assignments within the designated time.

**Methods of Assessment:**

1. Students are asked if certain problems do or do not lend themselves to solution by computer.

2. Students will be asked to find the answer to a question using the Web, and document their search for the solution.

3. Students are asked to create simple Web pages, including interactive elements.

4. Students are asked to identify basic components of the computer, describe their function, describe the different forms of data and how they are represented, and describe how data flows among the different parts of the computer.

5. Students are asked to write simple programs to solve a problem described in English.

6. Students are asked whether a specific problem is computable and/or feasible.

7. Given a topic, students will be asked to research the topic on the Web and determine which Web sources they find have higher significance and authority.

8. Students are presented with a Web site and a paragraph on material from the site, and are asked if the paragraph constitutes an example of plagiarism.

9. Students will be given assignments with definite due dates, and the timeliness and completion level of the assignments will be evaluated.
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<th>Week</th>
<th>Lecture</th>
<th>Practicum</th>
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<td>1</td>
<td>Introduction; what is computing? Computers, operating systems, algorithms, programs</td>
<td>Windows, Web, Email</td>
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<tr>
<td>2</td>
<td>Networks, LANs, WANs, TCP/IP</td>
<td>URLs, IP addresses, DNS names, tracert</td>
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<td>3</td>
<td>Data representation; storage devices</td>
<td>Data representation; history of computing</td>
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<tr>
<td>4</td>
<td>Algorithmic thinking</td>
<td>HTML I: Source file vs. browser display; basic tags, ordered and unordered lists</td>
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<td>5</td>
<td>Computer languages; compilation process</td>
<td>HTML II: Links, images, forms</td>
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<td>6</td>
<td>Searching the web; finding the information you want; plagiarism</td>
<td>Searching the web</td>
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<tr>
<td>7</td>
<td>Introduction to JavaScript: scripts, variables and expressions</td>
<td>Alert and prompt methods; variables and expressions</td>
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<td>8</td>
<td>Using predefined functions; Events and resulting actions: what happens when you click the mouse?</td>
<td>Library functions and predefined method; simple responses to events</td>
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<td>9</td>
<td>Computer structure and design, stored program concept</td>
<td>Architecture simulation</td>
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<td>10</td>
<td>Writing user-defined functions</td>
<td>Functions; events that invoke functions</td>
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<td>11</td>
<td>Solvability and feasibility; The Halting Problem</td>
<td>Loops and running time</td>
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<td>Security and privacy</td>
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<td>Encryption</td>
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<td>Reviews and Exams</td>
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Method of Evaluation

The course grade will be based on assignments and participation (33%), midterm examinations (2 at 17% each), and a final examination (33%).

Course Text


Bibliography


