Foundational Concepts of Computer Science
June 7 - July 30, 2021

General Information

Class Website:  http://www.cs.uni.edu/~schafer/cohort3/FCCS/

Credit Hours: Three (3). This course meets the Course Credit Hour Expectation outlined in the UNI Course Catalog. Since this course is an "8-week" summer course, students should expect to average 15-20 hours per week on this course. [Each "summer week" approximates two "semester weeks" of content].

Instructor: Ben Schafer
Email: ben.schafer@uni.edu

Course Information:

Course Catalog Description
Examine the breadth of the field of computer science beyond the programming of the computers. Topics include data storage and manipulation, computer organization, operating systems, networking and the Internet, software engineering, databases, and artificial intelligence. Give potential teachers a general introduction to commonly taught sub-disciplines in computer science so that they can have informed discussions with students before they study a topic more deeply.

There are no formal prerequisites for this course.

Course Philosophy/Design
This course is designed to:
- provide teachers with an overarching understanding of topics that may come up in a K-12 computer science setting
- prepare teachers to address elements identified in the Iowa K-12 CS Standards (aka the CSTA K-12 CS Standards)
- allow teachers build conceptual models of key aspects of computer science
- General topics include how computers work (data representation, instruction cycle, operating system, networking, etc.), social impact (privacy, security, equity, etc.), and important application areas (AI, big data, etc.).
- Actively participate in professional communities such as CSTA and ACM. Keep up with research in the area of computer science education, and apply it to the teaching process.

Course Grading
You will earn a total of eight (8) "competency scores" over the eight weeks of this course. Each competency score will be a value from 1-4 based on the following assessment:

<table>
<thead>
<tr>
<th>Score</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>You submitted the deliverables or attempted the activity but you show little understanding of the standards of the activity. [NOTE, you cannot pass this course (grade of C or higher) with any 1s in your grades]</td>
</tr>
<tr>
<td>2</td>
<td>You have made significant progress towards demonstrating competency but there are limited items that remain unsatisfied.</td>
</tr>
<tr>
<td>3</td>
<td>You have &quot;met&quot; the standards of the activity. [You have displayed minimum acceptable competency on this activity.]</td>
</tr>
<tr>
<td>4</td>
<td>You have &quot;exceeded&quot; the standards of the activity. [You have met the standards of competency and shown considerable understanding/knowledge of the material.]</td>
</tr>
</tbody>
</table>
The eight scores used to determine your grade consist of the following activities:

- Six (6) Competency Demos (one each after Modules 1-6)
  - Competency Demos can be thought of as similar to tests/exams in other courses
  - You will complete each competency demo within Blackboard.
  - If you are unsatisfied with your grade on any competency demo, you may talk to me, restudy the material, and attempt a second version of the CD.

- One final course project
  - The course project is similar to a final exam. Because it is meant as the important "final" assessment in the course it will be worth two scores in the gradebook.
  - In the course project you will be answering questions that will combine and integrate material from the six modules of the course.
  - You will have some freedom/latitude on which items you actually complete for your own personal final project.
  - Unlike the competency demos, you will not be given an opportunity to receive a grade and resubmit. So put your best product forward the first time.

Final course grades will be determined using the following evaluation criteria.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>All scores are 3 or 4 AND more 4s than 3s</td>
</tr>
<tr>
<td>B</td>
<td>All scores are 3 or 4 OR No more than one score of 2 AND an overall average of 3.25 or higher</td>
</tr>
<tr>
<td>C</td>
<td>No more than two scores of 2 AND an overall average of 3.00 or higher</td>
</tr>
<tr>
<td>D</td>
<td>More (3s and 4s) than (1s and 2s).</td>
</tr>
<tr>
<td>F</td>
<td>Any situation not handled above.</td>
</tr>
</tbody>
</table>

[Note: The previous information is my intentions regarding how I will be grading/evaluating your work and assigning final grades. However, in an effort to be responsive to your needs I reserve the right to modify the structure of this course as we are in progress. If there is significant deviation from the policies described below the new policy will be openly and clearly discussed with you and in a timeframe that gives you a time to plan accordingly.]

**Getting Help**
If you are having trouble with a topic in the class PLEASE make an effort to reach out to me. While I will not be sitting at my computer waiting for your contact, I am generally available between 8:00-4:00 Monday-Friday (and who am I kidding. I will probably read email many evenings and over the weekends too!). If you need help you should feel free to email me. If it can be answered in an email I will do so. If not, I will invite you to online office hours using the Zoom conferencing software. To start the course I will hold office hours by special arrangement only. However, if it becomes helpful to hold regularly scheduled office hours we will announce a formal schedule.

**Scholastic Conduct**
You are responsible for being familiar with the University’s Academic Ethics Policies:

[https://www.uni.edu/policies/301](https://www.uni.edu/policies/301)

Copying from other students is expressly forbidden. Doing so on exams or assignments will be penalized every time it is discovered. The penalty can vary from zero credit for the copied items (first offense) up to a failing grade for the course. If an assignment makes you realize you do not understand the material, ask a fellow student a question designed to improve your understanding, not one designed to get the assignment done. Your final submission for assignments should be individual, original work unless otherwise specified. Any substantive contribution to your solution by another person or
taken from a publication should be properly acknowledged in writing. Failure to do so is plagiarism and will necessitate disciplinary action. In addition to the activities we can all agree are cheating (plagiarism, bringing notes to a closed book exam, etc), assisting or collaborating on cheating is cheating. Cheating can result in failing the course and/or more severe disciplinary actions. Remember: Discussing assignments is good. Copying code or answers is not.

**Accessibility**
The University of Northern Iowa (UNI) complies with the Americans with Disabilities Act Amendments Act of 2008 (ADAAA), Section 504 of the Rehabilitation Act of 1973, the Fair Housing Act, and other applicable federal and state laws and regulations that prohibit discrimination on the basis of disability. To request accommodations please contact Student Accessibility Services (SAS), located at ITTC 007, for more information either at (319) 273-2677 or Email accessibility services@uni.edu. Visit Student Accessibility Services (https://sas.uni.edu/) for additional information.