

Foundational Concepts of Computer Science

June 12 – August 4, 2023

General Information

Class Website: <http://www.cs.uni.edu/~schafer/cohort23/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].

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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 teachers a general introduction to commonly taught sub-disciplines in computer science so that they can have informed discussions with students.

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.
- discuss broad computer science 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.).

Course Grading

You will complete six “competency demos” (CD) during the period of this course corresponding to the six chapters we are covering from your textbook (Chapter 1-4, 9, and 11). You can think of a competency demo like a test/exam. However, the overall score on the CD is not directly used in course evaluation. Instead, your overall performance on the CD is converted to a “competency score.” You will earn a total of seven (7) competency scores over the eight weeks of this course. Two scores will be earned for chapter 1 and one each will be earned for chapters 2, 3, 4, 9, and 11. Each competency score is a 1-4 summarization of your overall demonstration of abilities to meet the chapter standards based on the following assessment:

Score	Meaning
1	You completed the competency demo, but you show little understanding of the material in the standards of the chapter. [The highest course grade you can earn with a score of 1 is a C.]
2	You have made significant progress towards demonstrating competency on the standards but there are still several topics which remain unsatisfied. [The highest course grade you can earn with a score of 2 is a B.]
3	You have "met" the standards of the chapter. That is, you have displayed minimum acceptable competency on the standards for this chapter.
4	You have "exceeded" the standards of the chapter. That is, you have not only met the standards of competency but shown considerable understanding/knowledge of the material.

If you are unsatisfied with your score on any competency demo (in particular, if you did not earn at least a 3), you may meet with me to discuss the situation, restudy the material, and attempt a second version of the CD.

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

Grade Earned	Score	Additional Conditions
A	25 – 28	All scores 3-4
A-	25 – 28	All scores 2-4
B	21 – 24	All scores 3-4
B-	21 – 25	All scores 1-4
C	18 - 20	All scores 2-4
C- *	18 - 20	All scores 1-4
D *	15 - 17	All scores 2-4
D- *	15 - 17	All scores 1-4
F *	0 - 14	

NOTES:

* Because I allow – and actively encourage – retakes, I have not yet had a serious student earn a grade in these categories. Every student who has put in an honest effort to complete the course and has earned at least a C.

I reserve the right to assign "plus" grades under specific circumstances when the straight letter grade does not seem like an accurate representation of the course learning [e.g. – raise a B to a B+]

Getting Help

If you are having trouble with a topic in the class, PLEASE reach out to me. While I will not be sitting at my computer waiting for your contact, I am frequently available between 8:00-4:00 Monday-Friday. 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 meet with me via Zoom.

Scholastic Conduct

You are responsible for being familiar with the University's Academic Ethics Policies:

<https://www.uni.edu/policies/301>

In summary, all competency demos are closed internet/notes activities. While you are completing these on the computer, the only item that should be open during the CD is Blackboard. Copying from other sources/students is expressly forbidden. Your final submission for competency demos should be **individual, original** work unless otherwise specified.

You are actively encouraged to collaborate with your peers **prior** to the competency demo. However, once the CD has been officially opened you should not discuss the course material until everyone involved has completed the CD.

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.

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.