CMPSCI 190IN (INFO 101)
Introduction to Informatics
FALL 2014

Instructors:

Michelle Trim
Lecturer
545-4450
CS212 (Tu/Th 1:00-3:30)
mtrim@cs.umass.edu

William Verts
Senior Lecturer II
545-1719
LGRC A356 (Tu/Th 2:00-3:30)
verts@cs.umass.edu

Class:

Tuesdays/Thursdays 4:00-5:15, ELAB 323. No prerequisites, no required textbooks.

Description:

This course is to be a foundations course for the new Informatics major offered by the School of Computer Science.

CMPSCI 190IN (3 Credits) is an introduction to the main concepts of Informatics. There are several "Big Ideas" in computing, including but not limited to abstraction, data and information, algorithms, programming, and analysis of both computational problems and computational artifacts. This class provides an introduction to those ideas and considers some of the ways that those computing principles might be used to solve real world problems. Computer-based assignments are an integral part of this course but no programming knowledge or prior programming experience is expected or required.

Course goals include developing an understanding of computational thinking, methods, and/or artifacts, as well as how to create, test, evaluate, and debug those artifacts. Specific examples include exploring hierarchies of abstraction, searching and sorting strategies, analysis of errors in numerical programs, modeling of color, etc.

Course Grading:

Midterm #1:	15% (October 2, in-class)
Midterm #2:	15% (November 6, in class)
Final Exam:	25% (December 12, 3:30-5:30pm)
Homework/Quizzes/Projects:	45% (Throughout semester)
Grading:	A ≥ 90%, A- ≥ 88%, B+ ≥ 86%, B ≥ 80%, B- ≥ 78%, C+ ≥ 76%, C ≥ 64%, C- ≥ 62%, D+ ≥ 60%, D ≥ 50%.

Missing any exam results in an automatic "F" for the course. Fractional course scores get rounded to the nearest integer. For example, 87.49999 rounds down to 87 (B+), but 87.50000 rounds up to 88 (A-).

DO YOUR OWN WORK, INCLUDING HOMEWORK AND LAB WORK. You may discuss homework and lab assignments with other students, but you may not share files or disks. Upon discovery of duplication, we will contact you for a conference, as required in the guidelines set out by the University of Massachusetts Academic Honesty Policy, (see the document at: **http://www.umass.edu/dean_students/codeofconduct/acadhonesty/)** and we will resolve the issue according to those guidelines. **Do not** ask for extra work after the end of the semester to boost an undesirable grade. We **never** grant such requests.

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WEEK	TUESDAY	THURSDAY	
1	September 2 – Introduction. What is Informatics? What are the Big Ideas of Computer Science?	September 4 – Inventions. Computing that enhances creativity (CAD & CAM, 3D Printing, etc.).	**Creativity & Computers**
2	September 9 – Individuals and Innovation: what does a person have to know? Thinking out of the box.	September 11 – What should a person know? (Mathematics, engineering, programming, systems integration.)	
3	September 16 – Bits & bytes, kilo & mega, data types. How do we talk about computing?	September 18 – From atoms to A.I.: hierarchies of hardware, hierarchies of software.	**Layers of Abstraction**
4	September 23 – Using computers to represent and model the real world. Color and image processing.	September 25 – Solving The Big Problems. (Weather patterns, diseases, responding to disasters, etc.)	
5	September 30 – What's a database? What types of databases are there? What types have you already used?	October 2 – Midterm #1	**Data and Information**
6	October 7 – Data vs. Metadata. Bias. Correlation vs. Causality. How do we trust what we know?	October 9 – Searching, Sorting, and Indexing. Big-O Notation. I feel the need for speed!	
7	October 14 – Monday Schedule	October 16 – Ways data are used. Charting and Graphing. Lies, damn lies, and statistics.	
8	October 21 – Introduction to algorithms. How are algorithms specified? Programming languages.	October 23 – Playing Computer: in-class exercise on following a program. What could *possibly* go wrong?	**Algorithms and Programming**
9	October 28 – Who is The User? Programmers vs. their target audience. Interface design.	October 30 – The Mythical Man-Month. Why adding programmers to a late project makes it even later.	
10	November 4 – The Cathedral and the Bazaar: Proprietary software vs. Open-Source.	November 6 – Midterm #2	
11	November 12 (Wednesday) – What's a network? Where did the Internet come from?	November 13 – Web design, how to create a Web page. Why most Web pages are badly designed.	**Networking, the Internet**
12	November 18 – Networking and Social Media. The over-connected world. When should we unplug?	November 20 – How does ubiquitous computing affect how we think about solving problems?	
13	November 25 – Will the Empire Strike Back? The Internet vs. The World. The digital divide, network neutrality, censorship, surveillance.	November 27 – Thanksgiving	**Global Impacts of Computing**
14	December 2 – Future tech: viewing the murky crystal ball, and how new ideas and technology might disrupt societies in the future.	December 4 – Last Day of Class – Course Wrap-Up, Review for final exam.	