CS 6901 CAPSTONE EXPERIENCE: SYLLABUS
SPRING 2011 (ONLINE)

Contact:

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Course Home Page	: http://www.sci.csueastbay.edu/mathcs/capstone

Catalog Description:

A synthesis of important areas of Computer Science, culminating in comprehensive examinations covering these areas (4 units).

Prerequisites: Completion of at least 30 units toward the MS degree; satisfactory completion of all course requirements including CS 6260, CS 6560, the analysis/automata requirement, and the Writing Skills Test (WST).

Outline:

The course is a student-driven analysis of fundamental concepts in Computer Science. Students work in teams of four to analyze a large set of example problems in Systems, Data Structures & Algorithms, and Theory. The teams are self-forming and responsible for planning their collaboration. Students not able to find a team will be assigned to an existing team.

The course web site includes an examination syllabus with associated example problems, text references, lecture notes, diagrams, and some actual solutions. A weekly study plan is provided below to guide the teams, with the instructor providing answers to general conceptual issues, not detailed solutions.

After completing a section, each team submits solutions to two problems, as a practice examination. The instructor will evaluate each submission as Excellent, Good, Adequate, Poor, or No Effort (see the Grading Criteria below). The results do not affect the student's actual course grade.

The above activities are meant to help students prepare for the examinations, but are entirely optional. Other optional activities include essays, programming, presentations, key points per topic, etc.

Grading Criteria:

The student must take a 1.5 hour examination in each of three sections. Each section presents THREE problems (20 points each), but the student chooses only TWO problems, for a total of 40 points maximum per section.

Section 1: SYSTEMS [Operating Systems (2 questions), Computer Architecture (1)]
Section 2: DATA STRUCTURES (2) & ALGORITHMS (1)
Section 3: THEORY [Automata & Complexity (3)]

The course is graded CREDIT/NO CREDIT, and the student must receive a total score of 72/120 points (60% rule) to receive a CREDIT (PASS) grade. The following is the standardized Student Learning Outcome (SLO) for each exam:

Excellent	34-40 pts	: Understands essentially correct solution
Good	27-33 pts	: Understands correct solution, but errors in execution
Adequate	22-26 pts	: Some understanding of solution, but has serious errors
Poor	13-21 pts	: No understanding of solution, but has some knowledge of topic area
No Effort	0-12 pts	: No understanding of the solution, or the topic area

The above descriptions are on a per answer basis, and do not account for the variety between the two selected problems in the section. For example, scores of 17 and 17 are both essentially correct and yield an overall Excellent (34) result. Another example is an Adequate (22) result derived from an Excellent (17) understanding of one problem but No Effort (5) on the other problem.

These are examples of passing all three sections with a 72 score overall:

Adequate (24)	+ Adequate (24)	+ Adequate (24)
Good (28)	+ Adequate (22)	+ Adequate (22)
Excellent (34)	+ Excellent (34)	+ No Effort (4)
Excellent (34)	+ Adequate (25)	+ Poor (13)

If the student does not pass the course, either an INCOMPLETE or NO CREDIT grade will be issued. See the home page about details concerning re-taking the exam. If a student does not pass the exam, all three exam papers will be re-examined for a borderline pass.

Examination Schedule (MANDATORY):
Location: SC N120

SYSTEMS	: Saturday, 05/07/2011, 11am-12:30pm	[End Week 6]
DATA STRUCTURES & ALGORITHMS	: Saturday, 05/14/2011, 11am-12:30pm	[End Week 7]
THEORY	: Saturday, 06/04/2011, 11am-12:30pm	[End Week 10]

There will be an optional 1 hour Question & Answer session before each exam (9:30-10:30am).

Weekly Study Plan:

Week	Topics	
1	OS: Scheduling, Semaphores, Classical Problems	
2	OS: Progress, Deadlock, Memory, Disk	
3	Architecture	
4	DS: Lists	
5	DS: Trees	
6	DS: Search, Sort, Hash, Big-Oh	Exam: SYSTEMS
7	Analysis of Algorithms	Exam: DATA STRUCTURES & ALGORITHMS
8	Grammars	
9	Automata	
10	Complexity	Exam: THEORY

This is a substantial amount of work and, therefore, the team needs to utilize each member's contribution.

Collaboration/Plagiarism: Students are allowed to collaborate in study teams. Examinations are strictly individual. Violations will be prosecuted to the full extent of the University rules.