

CSCI 4800-01: Special Topics in Computer Science
(Software Engineering Design)
Course Syllabus
Summer 2011 - Short Term Session (First)

Course Description:

Course Title: Special Topics in Computer Science (Software Engineering Design)
Course Number: CSCI 4800 (CRN: 54552)
Section Number: 01
Credit Hours: 3.0
Weekly Contact Hours: Not Applicable (Independent Study)

Course Description: This course covers software requirements and specifications, software systems design techniques, software processes, software life-cycle models, software economics, configuration management, user interfaces, software testing, documentation and maintenance. CASE tools and software development environments will also be discussed. Students will gain experience in developing a medium-scale system development. Ethical issues related to software design are also covered.

Course Date: Monday, May 23, 2011 through Thursday, June 23, 2011. [Summer Short Term Session (First)]
Location: Not Applicable (Independent Study)
Meeting Day(s): Not Applicable (Independent Study)
Meeting Time(s): Not Applicable (Independent Study)

Prerequisite(s): Permission of instructor and department.

Course objectives and Learning outcomes: Students are expected to achieve a developing level of mastery of software requirements and specifications, software systems design techniques, and software processes. Students will be able to demonstrate an emerging level of knowledge of software life-cycle models, software economics, configuration management, user interfaces, CASE tools and software development environments. They will demonstrate the ability to develop a medium-scale software system, software testing, documentation and maintenance. Students will exhibit communication, reasoning, critical thinking and problem solving skills.

CS Program Outcomes

1. Be able to solve complex and significant problems with professional skill, by formulating efficient and effective algorithmic solutions to a wide variety of sophisticated problems normally encountered in real-world computing and in academe.
2. Be able to express algorithms clearly and correctly in a variety of programming languages.
3. Be able to demonstrate sufficient foundational knowledge of the following main subject areas of computer science: operating systems, databases, networks, graphics, software engineering, game design and implementation, and web technologies.
4. Have an understanding of ethical responsibilities related to the areas of computing and the workplace.
5. Have mastery of the theoretical underpinnings of Computer Science.
6. Apply breadth of computer science knowledge to either post-baccalaureate study or a career field.

Course Learning Objectives

1. Be able to solve complex and significant problems with professional skill, by formulating efficient and effective algorithmic solutions to a wide variety of sophisticated problems normally encountered in real-world computing and in academea
 - o Students will understand software development life cycle, evolution and methodologies
 - o Students will be able to use UML notation to model computer software systems
2. Be able to express algorithms clearly and correctly in a variety of programming languages.
 - o Students will be able to transition from analysis to design and implementation with related programming skills
 - o Students will be able to construct a working system prototype designed
3. Be able to demonstrate sufficient foundational knowledge of the following main subject areas of computer science: operating systems, databases, networks, graphics, software engineering, game design and implementation, and web technologies.
 - o Students will be able to construct software with related skills in database, web technologies and network

programming skills.

4. Have an understanding of ethical responsibilities related to the areas of computing and the workplace.
 - Students will understand software development ethics and their responsibilities
5. Have mastery of the theoretical underpinnings of Computer Science.
 - Students will be able to apply theories in computer science in software design
6. Apply breadth of computer science knowledge to either post-baccalaureate study or a career field.
 - Students will apply software engineering analysis and design techniques to solve real-world cases

Instructor Information:

Instructor Name: Muhammad Asadur Rahman, Ph.D.
Email: mrahman@clayton.edu
Office Location: UC 337
Office Hours: MTWR: 9:15am - 10:15am, 12:00-1:00pm
and available by appointment.
Phone: 678-466-4446

Text and Other Resources:

Textbook and References: 1. Software Engineering A Practitioner's Approach, 7th Ed. by Alan Roger S. Pressman •ISBN-10:0073375977 • ISBN-13: 978-0073375977, Publisher: McGraw-Hill , 2009
2. Software Engineering by Ivan Marsic online book: <http://www.ece.rutgers.edu/~marsic/books/SE/>

Software: Microsoft Visual Studio, NetBeans IDE 7.0, Java SDK, other software will be specified later

Course Policy:

Grading: There will be a midterm and a final exam in this course along with a number of quizzes. No makeup exam or makeup assignments will be allowed in this course. This course will have a number programming assignments. However, two lowest grade quizzes will be dropped to accommodate any unforeseen circumstances that may cause you to miss a quiz. There will be a number of hands-on in-class exercises (or projects) which may or may not be graded. Your grade in this course will be determined based on the percent of total points earned at the end of the term with the following weight given to each type of assessment:

Assessment Type	% of Total Grade
Final Exam:	20%
Midterm Exam:	20%
Assignments/SW Projects:	40%
Quizzes:(Two Quizzes)	20%

The final letter grades will be assigned based on the scale given below.

Letter Grade	% of Total Points Obtained
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	below 60%

Assignments: All quizzes and exams will be prescheduled and based on the topics assigned. You are expected to complete and submit the assignments in a timely manner. Late submissions will carry a penalty of upto 20% per day and no submission will be accepted after three days from the due date.

Midterm Grade Reporting: The mid-term grade in this course, which will be issued (if required by the University) on or before June 6, reflects less than half of the entire course grade. Based on this grade, students may choose to withdraw from the course and receive a grade of "W." Students pursuing this option must fill out an official withdrawal form, available in the Office of the Registrar, by mid-term of summer session 1, which occurs on June 7.

Attendance Policy: None - Not applicable. Students must communicate with the instructor on a regular basis via electronic medium.

Academic Standard and Conduct Expectations: All submitted work in this course must be your own work and no collaborative work is allowed unless directed otherwise by the instructor. Clayton State University does not condone cheating, plagiarism, or other forms of academic dishonesty. The student handbook contains further information and guidelines. Students are expected to uphold the school's standard of conduct relating to academic honesty and assume full responsibility for the content and integrity of the academic work they submit. The guiding principle of academic integrity shall be that a student's submitted work, examinations, reports, and projects must be that of the student's own work. Students shall be guilty of violating the honor code if they:

- Represent the work of others as their own.
- Use or obtain unauthorized assistance in any academic work.
- Give unauthorized assistance to other students.
- Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.
- Misrepresent the content of submitted work.

Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Office of Student Affairs. If a student is unclear about whether a particular situation may constitute an honor code violation, the student should meet with the instructor to discuss the situation before it arises.

Tentative Course Schedule:

The following is the schedule for this course and it is subject to change:

Date	Topic / Suggested Reading	Book Chapter	Assignments
May.23	Software Development Methods: Agile Development	Chapter.2	Assignment 1
May.24	Software Development Methods: Agile Development	Chapter.3	
May.25	Requirements Engineering: Understanding Requirements	Chapter.4	Quiz.1
May.26	Requirements Engineering: Understanding Requirements	Chapter.5	
May 31	Requirements Analysis and System Specification, Use case	Chapter.6	Assignment 2
June.01	Requirements Analysis and System Specification, Use case	Chapter.7	
June.02	Design concepts and Architectural Design	Chapter.8	
June.03	Midterm Exam (06/02/2011)		Midterm Exam
June.06	Design concepts and Architectural Design	Chapter.9	Assignment 3
June.07	Component Level Design	Chapter.10	
June.08	Pattern-Based Design	Chapter.12	
June.09	Overview of Software Testing - Quality Concepts	Chapter.14	Quiz 2
June.13	Unit, Integration and Systems Testing	Chapter.17	Assignment 4
June.14	Testing Conventional, OO, and Web Applications	Chapter.18-20	
June.15	Software configuration management	Chapter.22	
June.16	Software Measurement	Chapter.23	
June.20	Estimation for Software Projects	Chapter.26	
June.21	Project Scheduling	Chapter.27	
June.22	Software Maintenance and Reengineering	Chapter.29	
June.23	Final Exam (Last day of summer session I)		Final Exam

This is an independent study course and the students are expected to follow the readingschedule as given above. We will use GeorgiaView as the course management system and the student must check daily for any updates or postings. All content delivery and submissions including midterm and final exams will be managed via GeorgiaView.

Additional Information:

- ITP Choice:** All students enrolled at Clayton State University are required to have on-demand access to a notebook computer that meets the recommended hardware/software specifications that have been established by Clayton State faculty. Academic penalties may be incurred for not meeting this requirement. Refer to the ITP Choice website for specifications and FAQs: <http://itpchoice.clayton.edu/>. Also, each student is responsible for monitoring the Clayton State issued email address on a regular basis for official communications from faculty and administrators. Students must use Clayton State issued email address when communicating with faculty and administrators. Communications originating from non-CSU email address may be ignored.
- Disability Services:** Students with disabilities who wish to obtain this document in an alternative format or would like to request reasonable accommodations must contact the Disability Services Coordinator at 678-466-5445 or disabilityservices@clayton.edu. If you are already registered with Disability Services and are seeking accommodations for this course, please make an appointment with your instructor to discuss your specific accommodation needs and provide your accommodations letter.
- Note:** This syllabus is subject to change with notice. The notice will appear on this document or on the course website.

Last update: 11 May 2011.