School of Engineering, Computer Science and Mathematics
CS 4390 Software Development and Systems Programming
Fall 2019
SYLLABUS

Contact Information and Office Hours –

Instructor:	Vinitha Hannah Subburaj
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Office:	Engineering and Computer Science 230D
Office Phone:	806-651-5264
Office Hours:	MW 11.25 am to 1.25 pm or by e-mail appointment

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Texts and Other Required Components –

Required Text:

1. Software Engineering: Principles and Practice, Third Edition by Van Vliet © 2008 by Wiley, ISBN 9780470031469
   Hard Copy or E-Book.
2. GIT POCKET GUIDE, Fourth Edition by Silverman, ISBN 9781449325862
   Hard Copy or E-Book.
3. Additional materials will be posted to WTClass

Reading Text and All Supporting Materials: It is assumed you CAN and WILL read the textbook and all supporting materials including this syllabus.

Other Required Materials:

1. High speed internet access. This is provided for you if you work in the ECS 142 lab using the computers provided to support your work. If working on your own computer, you definitely will need high speed access to the Internet. All assignments, etc. will be posted on WTClass. You will be completing some assignments via remote SSH access.
2. Oracle's VirtualBox. Download version 6 (or latest version) for free from https://www.virtualbox.org. Be sure to also download and install (by simply clicking on the file) the extension pack.
3. A single (for all CS courses) 64 Gbyte (or bigger) USB 3.0 flash drive or external hard drive. Don't fall for the Generation 3 trap. Ensure that it really is USB 3.0 or 3.1. This flash drive will be used to hold a copy of a pre-configured Ubuntu Linux VM (virtual machine) that will be provided to the student as an appliance that can be imported using Oracle's VirtualBox Manager. This will be used for all CS courses.
4. For those who wish to work on programming assignments on their own computers, the computer should be no more than three years old with with at least two cores, clock speed 3.0 Ghz or faster, at least 8 Gbyte RAM, with at least 100 Gbyte free disk space, be capable of running the supplied Ubuntu Linux Virtual Machine, and should be running Windows 10 or later, MAC OS/X El Capitan or later, or a Linux distribution – (Ubuntu 16.04 LTS or later recommended).

Course Description and Purpose:

Software Development and Systems Programming is a sequential course with CS 4390 offered during the fall semester and CS 4391 offered during the corresponding spring semester. The main objective of these two courses is to prepare students entering into industry with the entire software development process through a hands-on experience. As a part of these courses, students will complete a significant software project. The main goal of the project development experience is to let the students strive to achieve Customer Satisfaction and focus on Software Reliability. In other words making sure the requirements specification document reflects the needs of the customer and the product delivered at the end of this course confirms that the listed requirements are met.

Prerequisite – CS 4325 and CS 4340.

Objectives/Student Learning Outcomes:

The specific learning objectives for this course are:
- Students will select a software project and work effectively on the project by forming teams of size three or above based on their selected project
- Students will be required to follow a formal software development approach to come up with a solution to the problem statement
- Students will be required to develop a thorough requirements specification document for the software to be developed using industry standards
- Students will be required to translate software requirements to design, design to code, and then test the software system based on appropriate software engineering methodologies
- Students will be required to develop a final project report and a final presentation with a strong emphasize on writing skills and oral presentation skills which form the basic platform for students entering into computing industries

Program Learning Outcomes:

Computer Science Program Outcomes:
Students completing the CS curriculum will be able to demonstrate:
- A system-level perspective
- An appreciation of the interplay between theory and practice
- Familiarity with common themes of computer science such as abstraction, complexity and evolutionary change; and
- Adaptability to the enormous pace of change in computing.

This course provides a focus on all the above areas.

Student Learning Outcomes as required by ABET (Accreditation Board for Engineering and Technology, Inc.)

The WTAMU CS program requires that students must attain, by the time of graduation:

1. **Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.**
2. **Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.**
3. **Communicate effectively in a variety of professional contexts.**
4. **Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.**
5. **Function effectively as a member or leader of a team engaged in activities appropriate to the program's**

discipline.

6. **Apply computer science theory and software development fundamentals to produce computing-based solutions.**

All the above items are emphasized in this course.

Course structure

This is a three credit hour course and the class meets twice per week. In this course, student project team of three to four members will be formed. This course will be a combination of traditional lecture classes, group discussions, peer review meetings, guest lectures, and evaluations. The lecture materials will aim preparing the students to get them started off with the project development process, needed software engineering skill set, and clearly understand the course outcomes. Students are required to dedicate 6 - 9 hours of work outside of class per week to excel in this course. The faculty will be available at all times to answer student questions. Students will be supervised, but are expected to be organized well while working with team members and developing their interpersonal, presentation and time management skills.

Teamwork

This course will emphasis team work and collaboration (percentage added to your final grade). The class will be divided into groups of three or four and will be assigned a project. Every member in the team is expected to participate and to contribute to the project development. The roles and tasks assigned to each member of the team should be noted and the team progress must be recorded. Team plans, management, and minutes of team meetings should also be penned down and be included along with the every project deliverable. Non-cooperation among team members should be brought to the instructor's notice immediately and must not wait until the end of semester.

Course Requirements and Evaluation –
The final course grade will be determined as follows (percentages may change):
There are different components to your team project. Detailed specifications of team project grade will be discussed in class.

In-class activities/Homework Assignments*	20	%
Attendance	10	%
Team Meetings/Agendas/Minutes	10	%
Team Project	30	%
Major Exams (two @ 10% each)	20	%
Final Exam	10	%
	100	%

Standards:
A: 90+   **and on-time submission of ALL assigned work and exams**
B: 80 to < 90
C: 70 to < 80
D: 60 to < 70
F: < 60

No makeup exams except for valid student situations. For this, student should notify and discuss with the instructor before final decisions are made.

Attendance policy:

Due to the in-class activities, class participation is a requirement. Students are also expected to come to each class on time and avoid disruptive side conversations. Checking email or doing other work during class is the same as not being in attendance. Regular attendance is expected. In-class activities missed due to absence cannot be made up.

Technology Policy:

Workstation/ laptop should only be open to the course notes. There will be class periods on critical material when all laptops will be closed. Students are responsible for protecting their work - both hard copy (save old copies) and electronic versions (use security provided by the operating system).
The project that is submitted should, in its entirety, be the student's original work. Copying the code of another is plagiarism. Supplying code to another student is an equally serious offense. Refer Academic Integrity statement.

Policy for Submission of Assignments:

1. Students are responsible for checking the WTClass page for CS 4390 at least 3 times a week and at all times that an email is sent by the instructor.

2. Students are responsible for all announcements and assignments made in class or via your school email.

3. If you know that you will be absent for an extended period of time during the semester, you MUST notify the instructor for discussion of consequences.

4. One and only one alternate test schedule will be arranged if and only if in advance and for valid reason.

5. Projects, tests, exercises, assignments and home work must be completed in the format and requirements specified and MUST include your name, class and instructor's name. If you submit a file, you must follow the naming conventions exactly.

6. All work submitted for credit is expected to be the work of the individual student. Team projects must include the author(s) for each part. All material, text, requirements, design, test case, and/or code reused (i.e. not written for the specific assignment) must include the source/author and date of the original. According to university policy academic dishonesty (cheating, collaboration, and/or plagiarism) is not permitted and will receive a mark of zero.

7. The assigned reading must be done during the study week of that chapter. Group discussion and group study of the assignments is permitted and encouraged, but when you begin to prepare your individual assignments all collaboration must cease.

8. Assignments, labs and homework are due on or before the due date. Late work will be deducted 10% per day as long as the work has not been graded and handed back to students, i.e. NO LATE work would be accepted once work is graded and returned to any student.

Cheating Policy –

Cheating in any form will not be tolerated. Cheating includes but is not limited to: copying from another student's homework; having someone else take an exam for you; using unauthorized resources (another person, cell phone, book, notes, etc.) during an exam; exiting the room during an exam without permission and returning to finish the exam. If a student is found cheating, it will be left up to the discretion of the faculty member as to the penalty of that offense. A penalty for cheating in this course many include but not limited to: a 0 on an assignment or exam; an F in the course; filing a "Statement of Fact and Resolution" in the Provost's Office.

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Academic Integrity –

All work must be completed individually unless otherwise stated. Commission of any of the following acts shall constitute scholastic dishonesty: acquiring or providing information for any assigned work or examination from any unauthorized source; informing any person or persons of the contents of any examination prior to the time the exam is given in any subsequent sections of the course or as a makeup; plagiarism; submission of a paper or project that is substantially the same for two courses unless expressly authorized by the instructor to do so. For more information, see the document at http://www.wtamu.edu/studentcode/.

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Acceptable Student Behavior –

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (Code of Student Life). Unacceptable or disruptive behavior will not be tolerated. Students engaging in unacceptable behavior may be instructed to leave the classroom. Inappropriate behavior may result in disciplinary action or referral to the University's Behavioral Intervention Team. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc.

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ADA Statement –

West Texas A&M University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to register with https://www.wtamu.edu/student-support/disability-services.aspx (SDS) and to contact faculty members in a timely fashion to arrange for suitable accommodations.

Contact Information: Student Success Center, CC 106; phone (806) 651-2335

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Title IX Statement –

West Texas A&M University is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect in an environment free of sexual misconduct and discrimination. Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. Harassment is not acceptable. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here:
- WTAMU Title IX Coordinator Becky Lopez – Kilgore Research Center 147,or call 806.651.3199

- WTAMU Counseling Services – Classroom Center 116,or call 806.651.2340
- WTAMU Police Department – 806.651.2300, or dial 911
- 24-hour Crisis Hotline – 800.273.8255, or 806.359.6699, or 800.692.4039 https://www.notalone.gov/ For more information, see the Code of Student Life http://www.wtamu.edu/studentcode.

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Evacuation Statement –

If you receive notice to evacuate the building, please evacuate promptly but in an orderly manner. Evacuation routes are posted in various locations indicating all exits, outside assembly area, location of fire extinguishers, fire alarm pull stations and emergency telephone numbers (651-5000 or 911).   In the event an evacuation is necessary: evacuate immediately. Do not use elevators; take all personal belongings with you; report to outside assembly area and wait for further information; students needing assistance in the evacuation process should bring this to the attention of the instructor at the beginning of the semester.

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CRITICAL DATES:

- August 26: Fall Semester Classes begin

- August 29: Last day to add a course or register for classes

- September 2: Labor Day – No Classes

- September 11: Last day to drop (NOT WITHDRAW) and receive any refund; 12th Class Day

- September 24: Fall Green Lighting begins

- September 26: Career Expo 10:00 am – 02:00 pm (Mandatory Attendance)

- October 11: Mid-term (half-way point of semester)

- October 31: 5 PM deadline for a student to drop a course or completely withdraw (drop all courses) from the fall semester and receive the grade of X

- November 1: Spring priority registration begins for Graduates

- November 4: Registration opens for Seniors

- November 6: Registration opens for Juniors

- November 11: Registration opens for Sophomores

- November 18: Registration opens for Freshmen

- November 27 – December 1: Thanksgiving Holiday

- December 5: Last day of classes

- December 6: Dead Day

- December 7 and 9-13: Final Exams

- December 14: Graduation

- December 16: Grades due in Registrar's Office by 9:00 AM

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Tips for Doing Well in this Course –

- ➢ Stay up to date in reading
- ➢ Submit all assignments on time
- ➢ Come to class and pay attention
- ➢ Take notes
- ➢ Do not steal others work

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Tentative Calendar of Readings, Topics and Due Dates –

Tentative Calendar (Due dates are subject to changes)

Date	Topics	Reading Assignments	Project deadlines
Week 1	- Introduction to SE - Software engineering Ethics	HVV - Chapter 1 Power point Slides uploaded – Introduction to SE SE ACM Code of Ethics – Document uploaded	Decide project teams and topics Project proposal Due – September 11th
Week 2	- SE engineering principles - Life cycle models	HVV – Chapter 3 Additional materials posted to BB	
Week 3	- Project Plan - Requirement Engineering	HVV- Chapter 9 Additional materials posted to BB	Requirements Documentation Due Sep.21st
Week 4	- Feasibility Analysis - Software Design modeling techniques	HVV – Chapter 10 Additional materials posted to BB	
Week 5	- Software Design modeling techniques	Materials posted to BB	Design Documentation – Phase I Due Sep. 28th
Week 6	- Software Design modeling techniques **Oct 2nd - Exam 1**	Materials posted to BB	

Week 7	• Software architecture / design	HVV – Chapter 11	Design Documentation – Phase II Due Oct 12th
Week 8	• Software architecture / design	HVV – Chapter 12	
Week 9	• Software tools • Implementation topics	HVV – Chapter 15 Materials posted to BB	Implementation Phase I deliverable Due Oct 26th
Week 10	• Non-functional requirements/ • Implementation topics	Materials posted to BB	Implementation Phase II deliverable Due Nov 2nd
Week 11	• Software Testing topics	HVV – Chapter 13 Additional Materials posted to BB	
Week 12	• Software Testing topics **Nov 13th - Exam 2**	Materials posted to BB	
Week 13	• Software Maintenance • Software Management	HVV – 14, 2	**Intermediate Project Presentation – Nov 16th**
Week 14	• Software Management Thanksgiving	HVV - 5	
Week 15	Additional Topics - TBA Wrap up		
Week 16	Additional Topics - TBA Wrap up		**Final Project Report and Presentation – Dec 2nd and Dec 4th**
Dec 6	Dead Day		
Dec 7 – Dec 13	Final Exam		