SOFTWARE DEVELOPMENT

CRN: 92813– **MW** (2:30pm-4:15pm) – Sec004 –Sparks Hall 427

TA Grader:
- Shruthi Kamidi: skamidi1@student.gsu.edu
- WebEx: https://gsumeetings.webex.com/meet/skamidi1

Course Description

This course is intended to teach the disciplined process of software development, a subset of software engineering. Using system methods, from formal specification of Unified Modeling Language (UML) for supporting software development, through engineering practices such as design, testing, and developing system architecture via design patterns, you will learn about general software development principles and software design patterns. The implementation part of the course covers coding, testing methods, code versioning, code style, and cursory project management using Java. Scaffolding methods for learning will start with individual assignments, leading to paired programming assignment, finishing in a small project with collaboration and peer review. Techniques relevant to industry will be incorporated to the lesson plan where appropriately related to the topics being covered.

Monday and Wednesday 2:30pm – 4:15pm, Sparks Hall 427

Contact Information

- My office hours are Tuesday at 1:00pm - 2:30pm, Wednesday 1:30 - 2:00pm.
- 25 Park Place, 7th floor, Room 741 (WebEx available, by appointment only and 24-hr notice in email.)
- **Email**: wjohnson6@gsu.edu
- **WebEx**: https://gsumeetings.webex.com/meet/wjohnson6

Learning Objectives

- Describe essential elements of software architecture, views, and styles
- Understand proper use of OOP principles: objects/classes, modularity, exceptions, and assertions
- Construct formal reports, oral presentations, and demonstrations of working software
- Describe and understand refactoring versus re-engineering system software
- Describe and understand inheritance, overloading, user interfaces, callbacks, separation of model from view/control
- Understand use of basic linear data structures for storage/manipulation of large and complex information and specific structured data types, including arrays, vectors
- Work with peers or small groups in code review: strengths, weaknesses, interesting features, provide guidance with constructive feedback
- Demonstrate the correct function of a program by developing a test plan to verify

Course Prerequisites

- Courses must be completed with a 'C' or higher grade to be in this course. CSc2720 – Data Structures

Assessments and Grades

Your assessment tests will be proctored by myself and/or a Grader teaching assistant (GTA) in a face-to-face setting. These will be on paper, supplied by myself and no scantron is needed. The exams will consist of multiple-choice and complex problem-solving questions. Grading will be completed at most, one week after each assessment. Since there are three sections of this course, I will be varying each assessment among the sections.

- No grades for assessments will be dropped and refer to make-up section if you are unable to be present for an exam.
- If you have accommodations, I will need a letter of approval from the GSU Student Services, office of access and accommodations. Your exams will be taken in their proctored office location on Atlanta campus.
- Gradescope will be used for grading and returned feedback of exams/quizzes/homework.
- Final Exam location is same as classroom lectures.
- Final Exam (2.5 hrs.) time/date is:

Grading

Event	Quantity	Course Grade Weight
Exams	Maximum 4	35%
Team Project	1	20%
Final Exam	1	25%
Labs/assignments	Between 9 and 13	20%

Make-up and Late Assignment Policy

- Make-up exams are not automatically given. If you have a wellness emergency such as injury, confirmed COVID infection, hospitalization, you will need to get excused 'absence' support here: https://deanœofstudents.gsu.edu/student-assistance/#professor.If you do find yourself with this dilemma, you will be given an exam by myself within 7 days of the missed exam date, if you are not incapacitated. It is your responsibility to contact me before or ON the day of exam to present your circumstances for evaluation of eligibility for make-up.
- All make-up exams are given during my office hours in a location nearby: 25 Park Place, Rm 741. I can only accommodate in my office hours unless otherwise, a conflicting class lecture.
- Assignments and quizzes are not allowed to be late or have make-up. This is a non-tolerant, non-negotiable policy to enable fairness, responsible work ethic, and prevent disruptive events for my graders and myself.

Required Materials

- This course is inaugural, and no single textbook is available. Several colleges and universities offer a 'concentration' area in software development, but it is a composition of numerous CS courses, not one single course.
- The content will be sets of notes and PowerPoint files. Labs will be given at end of lecture in the classroom while time remains to solve the programming challenge.
- GitHub account (later to be discussed)
- Visual Code with Java SDK installed to be used in class for lab assignments

Software Development Areas

- Development (Principles and Patterns)
- Construction (UML, IDE, (various editors) and Building Frameworks)
- Verification and Debugging (FindBugs and Peer Review)
- System Documentation (Javadoc) and Testing (Junit)
- Code Organization and Management (GitHub, Gradle)
- Validation (Requirements, Correct OOP Usage)
- Code implementation (CheckStyle)
- Team System Presentation (Soft Skills)
- Professional Ethics in Computer Science

Course Information Resources

1. "GitHub." [Online]. Available: https://www.github.com
2. "Visual Code." [Online]. Available: https://code.visualstudio.com/
3. "Java JDK." [Online]. Available: https://www.oracle.com/java/technologies/downloads/
4. "Findbugs." [Online]. Available: https://findbugs.sourceforge.net
5. "Junit." [Online]. Available: https://junit.org

Syllabus:

	Week # - Begin date	Topic and/or Content Covered
Module1	1- Aug21	Review of Java OOP language principles, Git, Visual Code, Java ref. libraries
	2- Aug28	Introduction to Software Development Principles and Coding Standards ***Lab1** – August 30 (Due at end of class, 30 min grace period)*
Module2	3 -Setp4	1. Finish Software Development Principles 2. Begin coding standards 3. ***Lab2** – September 6 (Due at end of class, 30 min grace period)*
	4- Sept11	1. Finish coding standards 2. Ethics in Software Development and Implementation (ACM Code of Ethics, case studies) 3. Review 4. ***Lab3** – September 13 (Due at end of class, 30 min grace period)*
	5-Sept18	1. **September 18 (Monday) Exam1 (OOP, software principles, coding standards, Ethics)** 2. UML (Diagrams, use cases, models)
	6- Sept25	1. Introduction to Design Patterns (Façade, Factory, others) 2. Applications of Design Patterns 3. ***Lab 4**- September 27 (Due at end of class, 30 min grace period)*
Module3	7- Oct2	1. Code Review Principles and Documentation standards (JavaDocs) 2. Structured Query Language (SQL) 3. ***Lab 5**- October 4 (Due at end of class, 30 min grace period)*
	8- Oct9	1. ~~Introduction to Test-driven Development, unit testing, and code debugging~~ 2. ~~***Lab6** – October 11 (Due at end of class, 30 min grace period)*~~ 3. **Self-Withdrawal on the 10th by 5pm EDT**
	9 -Oct16	1. SQL Introduction 2. ***Lab6*** – October 18 (DUE is **not** end of class time.)
Module4	10 -Oct23	1. Introduction to Test Driven Development, Unit Testing, Code Debugging 2. **October 25 (Wednesday) Exam2 (UML, Design Patterns, Code review, SQL)**
	11 -Oct30	1. Programming Style Principles, Classes (Coupling, Cohesion, Completeness) 2. Packages and code organization 3. ~~Team project explained, teams formed.~~ 4. PreWORK - ***Lab7***
	12- Nov6	1. Return EXAM2 2. ***Lab7*** 3. Team project explained, teams formed 4. Abstraction and data encapsulation in Design and Implementation 5. ***Lab8***
Module5	13- Nov13	Database Systems Usage in Development and Implementation
	xx- Nov 20	THANKSGIVING BREAK, no classes
	14 -Nov27	Potentially a ***Lab9*** in lieu of exam
	15- Dec4	Review for Final Exam

Final Exam: Wednesday, December 6, 2023, 1:30pm to 4:00pm

COURSE POLICIES

Sharing Instructor Created Materials

University policy prohibits students from posting instructor-generated materials on external sites. The selling, sharing, publishing, presenting, or distributing of instructor-prepared course lecture notes, videos, audio recordings, or any other instructor-produced materials from any course for any commercial purpose is strictly prohibited unless explicit written permission is granted in advance by the course instructor. This includes posting any materials on websites such as Chegg, Course Hero, OneClass, Stuvia, StuDocu, YouTube, and other similar sites. Unauthorized sale or commercial distribution of such material is a violation of the instructor's intellectual property and the privacy rights of students attending the class and is prohibited.

Attendance and Participation Policy

Course participation is beneficial to your success. Our university community has a strong tradition of upholding the value of mutual respect, I therefore ask students to not engage in behavior that would be disruptive if your fellow students make a different choice about wearing masks. If you have concerns, please discuss them with me and I will work to the best of my ability to provide a comfortable environment conducive to student learning. COVID mask restriction information can be found here: https://covidinfo.gsu.edu/vaccine.

A well-developed attendance policy will be especially helpful this semester and you are expected to attend class if you do not have an excused absence. University has a process for students seeking excused absences through the Dean of Students Office. Students submit documentation to: https://deanofstudents.gsu.edu/student-assistance/professor-absence-notification/. I will be notified by the Dean of Students of any excused absence without the need to manage medical information individually.

Make-up Policy

- Make-up exams are not allowed for any reasons other than excused absences from the Dean of Students. This is not negotiable for any reason(s).
- Make-up quizzes and labs are not allowed for any reasons other than excused absences from the Dean of Students. This is not negotiable for any reason(s).
- Make-up homework assignments are not allowed for any reason(s). The homework assignments are specifically timed to coincide with the course content and pedagogy delivery. This paring is by design to aid in your learning of the course topics. Solutions are posted in iCollege very soon after the 'due' date/time so you may benefit from the correct answers.

Basic Needs Statement

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable us to provide resources that we may possess. The Embark program at GSU provides resources for students facing homelessness.

Academic Honesty

All parties involved in cheating and/or plagiarism will be given a zero on the specified event for the first offense. By all parties, I mean the person(s) who used someone else's work and the person whose work was used. A second offense of cheating and/or plagiarism will result in a grade of F for the course and possible expulsion from university. OpenAI is a new technology using ML and deep learning to answer questions of a variety of topics, i.e., cheating. It is being used in academe for student assignments and its usage can be detected with various techniques and analysis tools. **Academic Honesty Policy:** https://deanofstudents.gsu.edu/files/2019/07/Academic-Honesty-Policy.pdf

Accommodation

Students who wish to request accommodation may do so by registering with the Office of Access and Accommodation. Students may only be accommodated upon issuance by a signed Accommodation Plan and are responsible for providing a copy of that plan to me and lab instructors in which accommodations are sought. Students with special needs should then make an appointment with me during the first week of class to discuss any accommodations that need to be made. https://access.gsu.edu/

FERPA

In keeping with University System of Georgia and GSU policy, this course website will make every effort to maintain the privacy and accuracy of your personal information. Specifically, unless otherwise noted, it will not actively share personal information gathered from the site with anyone except university employees whose responsibilities require access to said records. However, some information collected from the site may be subject to the Georgia Open Records Act. This means that while we do not actively share information, in some cases we may be compelled by law to release information gathered from the site. Also, the site will be managed in compliance with the Family Educational Rights and Privacy Act (FERPA), which prohibits the release of education records without student permission.

Sexual Harassment

In instances of sexual misconduct, the present instructor(s) and teaching assistants, are designated as Responsible Employees who are required to share with administrative officials all reports of sexual misconduct for university review. If you wish to disclose an incident of sexual misconduct confidentially, there are options on campus for you do so. For more information on this policy, please refer to the Sexual Misconduct Policy which is included in the GSU Student Code of Conduct.

Campus Carry

The Campus Carry legislation allows anyone properly licensed in the state of Georgia to carry a handgun in a concealed manner on university property with noted exceptions. Information about the law can be found at safety.gsu.edu/campus-carry. It is the responsibility of the license holder to know the law. Failure to do so may result in a misdemeanor charge and may violate

the Georgia State Student Code of Conduct. Please follow the guidelines established by the Board of Regents.

Recommendation Requests

The topic of recommendations for any request is a personal matter. I prefer you to meet with me prior to me granting all requests for a recommendation for graduate school, employment (full-time or internship), awards, etc. The time to create a recommendation is not small, so I may ask you write the recommendation to highlight your achievements and knowledge, then allow me to edit.