SWE 3633 Software Architecture and Design

Instructor

Professor Rachel L. Foster

Web: http://facultyweb.kennesaw.edu/rfoste42/index.php

E-mail: Use D2L email for all course-related communications

Office Phone: 470-578-2857
Office Location: J-126
Office Hours: Monday & Wednesday (by appointment only); available to meet virtually via Microsoft Teams or D2L Collaborate Ultra

Email and Classroom Response Times:
I generally check my D2L email once a day, not including weekends or holidays. During the week, I will endeavor to respond to all emails within 48 hours. I will respond to emails received over the weekend (starting Friday at 4 PM) on Monday mornings. Assignments will be returned within 10-14 days.

Course Description

This course covers the fundamental design principles and strategy for software architecture and design. Architectural styles, quality-attributes, notations and documents, reference architecture, domain specific architecture in architecture process and pattern-oriented design, component-oriented design, and interface design in detailed design process are discussed.

Course Objectives

Prerequisite: SWE 3313 or CPE 3000.

By the end of this course, the student should be able to:
1. Apply principles of SWE practices especially of architectural design and detail design in design phase of SDLC.
2. Demonstrate the ability to analyze the software requirements, foundational specifications for the system to determine the strategies, techniques, and patterns before it is implemented.
3. Use software design tools to effectively design the software system architecture and its sub-elements.
4. Identify new architecture and design patterns, apply new design styles and design patterns in software architecture and design, and will be capable of lifetime learning.
Required Textbook/Supporting Materials

Introduction to Software Engineering Design: Processes, Principles, and Patterns with UML2 by Christopher Fox.

D2L Minimum Technology Requirements

Online learning requires access to computer resources. Generally, basic standards include a computer (either a PC or a Mac) that is less than five years old, equipped with at least Microsoft Office 2007 (including Word, PowerPoint, and Excel) and recent versions of free media players (e.g. RealPlayer, Windows Media Player, QuickTime).

Your internet connection will also be important to your ability to access information. We highly recommend a high-speed internet connection for taking online courses.

Minimum Technical Skills

A working knowledge of the D2L Brightspace learning management system is required for participation in this course.

This course will require participants to have average computer literacy. Students should be proficient with the basic functions of standard software packages (e.g., MS Word, MS Excel, MS PowerPoint, and Adobe Reader) and standard players (e.g., QuickTime, Windows Media Player). These programs will need to be accessible to students through home use or other computer access. A list of primers on many of these technologies is available at https://apps.kennesaw.edu/portal/prod/app_uni_cdoc_publ/documents/

Grading

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<thead>
<tr>
<th></th>
<th>20% of final grade (5% each)</th>
<th>30% of final grade (15% each)</th>
<th>50% of final grade (25% each)</th>
<th>100%</th>
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<tbody>
<tr>
<td>Assignments &amp; Quizzes (4)</td>
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<td>Team Projects (2)</td>
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<tr>
<td>Midterm and Final Exams</td>
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<td><strong>Total</strong></td>
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**Grade Conversion:** A: (90-100), B: (80-89), C: (70-79), D: (60-69), F: (0-59)

Some of the grade components listed above are graded at the team level. This means that each team member usually receives the same grade for each such element. However, if a student does not perform at the team level for a given element, that student should NOT expect the same grade as the other team members. This includes both students who choose not to participate to an appropriate degree and those who choose to be a “team hero.”
Course Outline – Fall 2019

Below is an outline of the content and activities in each unit of the course.

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<th>Modules</th>
<th>Activities</th>
<th>Dates</th>
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<td>Module 1 – Intro to Software Design</td>
<td>Chapter 1</td>
<td>Aug 19-25</td>
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<td>Module 2 – Software Engineering Architectural Design</td>
<td>Chapter 1</td>
<td>Aug 26-30</td>
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<td>Labor Day Holiday</td>
<td>Aug 31-Sep 02</td>
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<td>Module 3 – UML Diagrams, Software Design Processes &amp; Management</td>
<td>Chapter 2, Assignment 1, Quiz 1</td>
<td>Sep 03-08</td>
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<td>Module 4 – Product Design Planning, Analysis and Resolution</td>
<td>Chapters 3, 4, 5</td>
<td>Sep 09-15</td>
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<td>Module 5 – Use Case Modeling</td>
<td>Chapter 6</td>
<td>Sep 16-22</td>
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<td>Team Project 1</td>
<td>Sep 16-29</td>
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<td><strong>Midterm Exam</strong></td>
<td>Sep 23-29</td>
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<td>Module 6 – Engineering Design Analysis</td>
<td>Chapter 7</td>
<td>Sep 30-Oct 06</td>
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<td>Module 7 – Engineering Design Resolution</td>
<td>Chapter 8</td>
<td>Oct 07-13</td>
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<td>Module 8 – Architectural Design</td>
<td>Chapter 9</td>
<td>Oct 14-20</td>
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<td>Module 9 – Architectural Design Resolution</td>
<td>Chapter 10</td>
<td>Oct 21-27</td>
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<td>Assignment 2, Quiz 2</td>
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<td>Module 10 – Mid-level Detailed Design</td>
<td>Chapters 11, 12</td>
<td>Oct 28-Nov 03</td>
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<td>Module 11 – Low-level Detailed Design</td>
<td>Chapter 14</td>
<td>Nov 04-10</td>
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<td>Module 12 – Architectural Styles</td>
<td>Chapter 15</td>
<td>Nov 11-17</td>
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<td>Team Project 2</td>
<td>Nov 11-24</td>
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<td>Thanksgiving Break</td>
<td>Nov 25-Dec 01</td>
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<td>Final Exam Review</td>
<td>Dec 02-09</td>
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<td><strong>Final Exam</strong></td>
<td>Dec 10-12</td>
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Course Expectations

Expectations / Class Participation

During each week, students are expected to:
- Attend all lectures (for face-to-face sections);
- Check the D2L course website regularly;
- Review weekly materials (PowerPoint slides, website links, etc.);
- Complete and submit assigned quizzes or homework on time.

Homework assignments must be done individually, unless specifically designated as a group/team project. Individual submissions will not be accepted for group/team projects.

Communication Rules

In any classroom setting there are communication rules in place that encourage students to respect others and their opinions. In an online environment the do's and don'ts of
online communication are referred to as **Netiquette**. As a student in this course you should:

- Be sensitive and reflective to what others are saying.
- **Avoid typing in all capitals** because it is difficult to read and is considered the electronic version of 'shouting'.
- Don't flame - These are outbursts of extreme emotion or opinion.
- Don't use offensive language.
- Don't use abbreviations or acronyms unless the entire class knows them.
- Be forgiving. Anyone can make a mistake.
- Keep the dialog collegial and professional, humor is difficult to convey in an online environment.
- Always assume good intent and respond accordingly. If you are unsure of or annoyed by a message, wait 24 hours before responding.

**Format for Assignments**

Your work should be prepared in a form that can be opened with **Microsoft Word**. Use a font no smaller than twelve and leave at least a one-inch margin on all four sides of the page.

Please name your file “YourLastName_AssignmentIdentification.xxx”. For example, Foster_Assignment1.docx.

In the upper right corner of the first page of each assignment, put the following information in the order shown below.

```
Your name
Date submitted
Assignment identification
```

Here is an example:

```
Rachel L. Foster
May 30, 2018
Assignment 1
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**Assignment Submission and Late Assignments**

All assignments, projects, reports, etc. must be submitted online in the appropriate D2L submission folder. Submission instructions will be given for each individual assignment in the dropbox tool within D2L. Points will be deducted for not following the submission instructions. Check D2L for due dates. Generally, no submission is allowed outside of D2L unless the student is explicitly instructed to do so by the instructor. Be sure to submit your work well ahead of due date. Excuses like website or computer error will not be accepted after the assignments are closed.

All assignments, homework, projects, etc. are due by the date and time indicated. All due dates are in Eastern Time. Late work will **not be accepted** without documentation of a university-approved absence. In exceptional cases, the instructor may elect at his or her
sole discretion to accept late work. In such cases, a penalty of 15% per calendar day or portion thereof will usually be assessed.

A Note About Collaboration

Collaboration with your classmates in studying and understanding the material is part of the collegiate experience, and is encouraged. Group discussion is allowed and encouraged for the understanding of and studying for a project or assignment.

Collaboration on written assignments is permitted and encouraged, BUT each student must turn in their own original work written in his or her own words. The actual preparation of the assignment should only be done by the individual student. Copying and/or submitting another's work is considered cheating.

Work which was not done solely by the student may result in: a “0” grade for the assignment, a grade of “F” for the course, and referral to the university’s academic honesty committee for further disciplinary action up to and including dismissal from the university. Refer to the student handbook and university policies and procedures for more information.

When work is designated as “group work”, the group of students will collectively be considered an “individual” for the purposes of this policy. Students working in assigned groups will turn in one assignment that is the collaborative effort of the group and must be the original work of the team members. If a group assignment is submitted with material that is not original work, the grade for the entire team will be a ZERO and all members will be subject to this honesty policy. Group members must ensure that work submitted is created by the team members.

All portions of the honor code will apply to university courses. All academic honesty violations or alleged violations of the honor code will be reported to the appropriate university offices.

It is very important that you understand the concepts of academic integrity. If any of the above is not clear, or if you are not certain what some of the terms mean, please ask the instructor. A misunderstanding in this area could jeopardize your academic career.

What is Plagiarism?

Plagiarism is defined as the practice of taking someone else’s work or ideas and passing them off as one’s own. If you are unaware or uncertain on how to properly cite a particular source, please do not neglect to add the citation – that is considered plagiarism.

If you have questions on how to cite your work, please contact me immediately! For more information, please refer to the “Plagiarism Policy” under the University Policies section of this syllabus.
Turnitin

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

Help Resources

Contacts to get Help

Student Help Desk studenthelpdesk@kennesaw.edu or call 470.578.3555
D2L FAQ’s click here
D2L Student User’s Guide click here
UITs Student Training Workshop Schedule click here

Additional Resources

Remote access to Library Resources: http://library.kennesaw.edu/
Student Support: http://learnonline.kennesaw.edu/resources/student_support_resources.php
Tutoring and Academic Support: http://learnonline.kennesaw.edu/resources/tutoring_academic_support.php
Advising: http://learnonline.kennesaw.edu/resources/advising.php
Bookstore: http://bookstore.kennesaw.edu/home.aspx

University Policies

Academic Honesty

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section II of the Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/ falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement.
**Plagiarism Policy**

No student shall receive, attempt to receive, knowingly give or attempt to give unauthorized assistance in the preparation of any work required to be submitted for credit as part of a course (including examinations, laboratory reports, essays, themes, term papers, etc.). When direct quotations are used, they should be indicated, and when the ideas, theories, data, figures, graphs, programs, electronic based information or illustrations of someone other than the student are incorporated into a paper or used in a project, they should be duly acknowledged.

**Copyright of Course Materials**

The PowerPoint slides, lecture notes, handouts, projects, quizzes, exams, exercises and any other material used in this course are the property of the publisher, other third parties or the professor.

All other course material, including but not limited to slides developed by the instructor(s), the syllabus, assignments, course notes, course recordings (whether audio or video) and examinations or quizzes are the property of the University or of the individual instructor who developed them. Students are free to use this material for study and learning, and for discussion with other students or tutors.

Republishing or redistributing this material, including uploading it to web sites or linking to it through public services like Dropbox, Google Documents, and other services violates the rights of the copyright holder and is prohibited. There are civil and criminal penalties for copyright violation. Publishing or redistributing this material in a way that might give others an unfair advantage in this or future courses will subject you to penalties for academic misconduct up to and including dismissal from the university for a first offense.

*If you post or distribute any of these materials either physically, electronically, or online, through a social group or network or any other medium, you will be receive a grade of F for the course and be referred to the academic honesty committee for further action.*

**Honors Learning Experience**

Turn any three-credit hour course into an Honors Learning Experience (HLE) by completing an Honors Contract. Meaningful Honors Contracts result when proactive students work with a professor of a course to find ways to deepen or extend learning within a course by extending a course assignment or activity or adding an assignment or other product to the class. An Honors contract should represent approximately 15 hours of work beyond regular course requirements (or about one hour/week of a 15-week semester). For questions contact honors@kennesaw.edu.

For more info, please familiarize yourself with the pathways: [https://honors.kennesaw.edu/programs/requirements.php](https://honors.kennesaw.edu/programs/requirements.php)
Disability Statement

Kennesaw State University provides program accessibility and reasonable accommodations for persons defined as disabled under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Kennesaw State University does not deny admission or subject to discrimination in admission any qualified disabled student.

A number of services are available to help students with disabilities with their academic work. In order to make arrangements for special services, students must visit the Office for Student Disability Services and make an appointment to arrange an individual assistance plan. In most cases, certification of disability is required.

Special services are based on

- medical and/or psychological certification of disability,
- eligibility for services by outside agencies, and
- ability to complete tasks required in courses.

ADA Position Statement

Kennesaw State University, a member of the University System of Georgia, does not discriminate on the basis of race, color, religion, age, sex, national origin or disability in employment or provision of services. Kennesaw State University does not discriminate on the basis of disability in the admission or access to, or treatment or employment in, its programs or activities.

The Americans with Disabilities Act (ADA), Public Law 101-336, gives civil rights protections to individuals with disabilities. This statute guarantees equal opportunity for this protected group in the areas of public accommodations, employment, transportation, state and local government services and telecommunications.

The following individuals have been designated by the President of the University to provide assistance and ensure compliance with the ADA. Should you require assistance or have further questions about the ADA, please contact:

- ADA Compliance Officer for Students
  470-578-6443
- ADA Compliance Officer for Facilities
  470-578-6224
- ADA Compliance Officer for Employees
  470-578-6030

For more information, go to: [http://www.kennesaw.edu/stu_dev/dsss](http://www.kennesaw.edu/stu_dev/dsss).