CSCI 5300 – Software Design

Credits: 3     Section: 201   Term: Spring 2022

Location and Meeting Time

Classroom location:
- Tue – In-person, MC 125, 5pm – 6:50pm
- Thu – In-person, MC 120, 5pm – 6:50pm
Nicks Hall 436 5pm-7:45pm

Contact Information

Instructor: Jeffrey Roach, Ph.D.
Email: roachj@etsu.edu (preferred)
Office: Nicks 473 / Zoom
Phone: 423-439-6966

Instructor Availability

Office Hours
- 10 minutes per student
- In person: Tue & Wed: 1:30pm to 3:30pm
  ➢ Nicks 473
- Zoom: Mon: 5pm-6pm, Thu: 1:30pm-2:30pm
  ➢ Please email me to set up a meeting time
  ➢ https://etsu.zoom.us/j/4234396966

Email Hours
I should be able to respond to emails Mon-Fri, 9:00am-4:00pm within a reasonable turnaround time. I do not respond to emails on weekends.

Course Overview

Course Purpose and Objectives
Several methods of software design will be discussed. Evaluation, verification, and validation of designs will be stressed. By the end of the course, you will be able to: use the Unified Modeling Language to create object-oriented designs for small, medium, and large programs; understand the theoretical basis of object-oriented design concepts; use structured design methods; correctly use physical design principles; create test plans based on designs; and evaluate designs for quality.

Expected Learning Outcomes
At the completion of this course, the student should be able to:
1. Demonstrate a mastery of the concepts of object-oriented design and a proficiency in UML
2. Create structural, behavioral, and state diagrams for software designs
3. Design and evaluate solutions using a variety of software architectures
4. Use inheritance, polymorphism, and encapsulation in software designs
5. Use components, frameworks, and design patterns in software designs
6. Evaluate designs for performance and quality and use design metrics
7. Write test plans based on existing designs
8. Evaluate issues related to data structures, algorithms, and database design as they relate to software design

Prerequisites
A working knowledge of programming, data structures, file processing, architecture, compilers, and database systems, either from course work or from industrial experience. It is your responsibility to acquire knowledge in these areas to support your work in this course if necessary.

Materials
Required Textbook
- There is no required textbook.

Reference Books

Computing Databases Library Link
- https://libraries.etsu.edu/az.php?s=119368

Additional Tools
- We will use astah* (https://astah.net/products/astah-professional/) for our UML modeling.
- Visual Studio Community 2022
  - Download from https://visualstudio.microsoft.com/vs/
  - Workloads
    - ASP.NET and web development
    - Data storage and processing
    - .NET desktop development

Course Policies

Attendance
- Attendance is expected.

Assignment and Grading
- Various Assignments
  - You must show your code and demonstrate your solution to the assignment to me
- Term Project

Grade Assignments

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numeric Score</th>
<th>Calculated As</th>
<th>Grade Range (inclusive) Rounding may be applied</th>
<th>Interpretation</th>
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</thead>
<tbody>
<tr>
<td>A+ *</td>
<td>1</td>
<td>100</td>
<td>93 to 100</td>
<td>Perfect</td>
</tr>
<tr>
<td>A</td>
<td>.95</td>
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<td>Excellent</td>
</tr>
<tr>
<td>A-</td>
<td>.91</td>
<td>91</td>
<td>87 to 89</td>
<td>Very good</td>
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<td>B+</td>
<td>.88</td>
<td>88</td>
<td>83 to 86</td>
<td>Good (high)</td>
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<tr>
<td>B</td>
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<td>85</td>
<td>80 to 82</td>
<td>Good</td>
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<tr>
<td>B-</td>
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<td>81</td>
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<tr>
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<tr>
<td>C</td>
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<tr>
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<td>Less than 70</td>
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<tr>
<td>F</td>
<td>.5/.4/.3/.2/.1</td>
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<td>Fail</td>
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<tr>
<td>U *</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>No attempt / Not even close</td>
</tr>
</tbody>
</table>

* These letter grades are not used for final grades for graduate classes

Expectations
Students should expect the instructor to be in class on time, to be prepared, to be attentive to students, to be available to answer questions and provide help related to the course, and to make a genuine effort to help students achieve course objectives. On those rare occasions when the instructor must miss class, students should expect suitable arrangements for the class to continue in the instructor’s absence. Students should expect the instructor to devote reasonable time and effort to the course.
Similarly, the instructor expects students to be in class on time, be prepared, be attentive and participate in class, complete assignments on time, make a genuine effort to meet the course objectives, and devote reasonable time and effort to the course. Be prepared to spend a minimum of 6 hours outside of class per week.

You are strongly encouraged to ask appropriate questions and to participate in class discussions and activities. You may learn as much from each other as from the instructor. If you are confused about some point, chances are that others are also confused and will appreciate that you ask for clarification.

**Academic Integrity Policy**
- You are encouraged to discuss course material, including assignments, with members of the class and others. Helping one another find and understand problems in assignments is permitted if an honest individual attempt has been made to solve the problem.
- Do not submit another person’s work as your own, this is academic misconduct.
- Do not give someone else your solution, this is academic misconduct.
- Everyone must do his/her own work. Use of another person’s work (if allowed) must be properly cited.
- Completing as assignment “by committee” and submitting it as an individual work is academic misconduct unless the assignment has been designated as a team assignment.
- Your name on submitted work is an affirmation that the work is yours.

**Policies for this course**
All submitted work MUST be your OWN work! This applies to class work, papers, projects, labs, and exams. In cases of academic misconduct, the following rules will apply:
1. No credit for the assignment
2. A report submitted to the college
3. One letter grade decrement for each incident from the final grade
4. Other penalties may apply
5. The instructor reserves the right to reevaluate past assignments

**Grades and Course Content**
- Grades and course content are available through D2L.

**ETSU Coronavirus Policy**
- [https://www.etsu.edu/coronavirus/](https://www.etsu.edu/coronavirus/)

**Additional Policies**
- Syllabus Attachment