جامعة نيويورك أبوظبي
NYU | ABU DHABI

CS-UH 2012

# Software Engineering - 004

Spring 2025

**Credits**: 4

**Prerequisites**: CS-UH 1050, Data Structures

**Corequisites**: None

| **Faculty Details** | Professor | Teaching Assistant |
|---|---|---|
| Name | Mohamad Kassab | Faisal Zeeshan |
| Email | mk9508@nyu.edu | fz2335@nyu.edu |
| Office Hours | Thursdays 11:00 am – 12:00 pm<br>(Office: C1 – 112**)**<br>By appointment:<br>(Location can be selected: In person C1 – 112 or on Zoom) | M/W 12:00 to 2:00 PM,<br>(Office: A2-1111)<br>Or by appointment:<br>https://calendly.com/fz2335/office-hours |

| **Course Details** | Day/Time | Location |
|---|---|---|
| Lecture | Tu / Th 12:45PM – 2:00 PM | Computational Research Room 004 |
| Mid Term Exam | 6-March -2025 (During Lecture Hour) | In class |
| Final Exam | See schedule on Albert | See schedule on Albert |

**Course Description**

This course counts toward the following NYUAD degree requirements:

Majors > Computer Science > Computer Science Required Course

This course is an intensive, hands-on study of practical techniques and methods of software engineering. Topics include fundamental concepts in SE, software process models, requirements specification, planning principles and techniques for cost-effective engineering of quality software, detailed design and modeling experience to represent creational, structural and behavioral aspects of a software system using a common modeling language, implementation, testing, software quality assurance, software project management and scheduling, risk management, and software maintenance.

**Course Learning Outcomes and Link to Program Learning Outcomes (PLOs)**

| Students who successfully complete this course will be able to: | CLO Level of Contribution | Linked to Computer Science Major PLOs[1] |
|---|---|---|
| 1. Explain and compare a number of modern software process models. | High | PLO 1 |
| 2. Elicit, analyze and document the requirements for a software system. | High | PLO 1, PLO 2 |
| 3. Design models (use-case, class, and interaction models) to represent structural and behavioral aspects of a software system. | High | PLO 1, PLO 2 |
| 4. Apply effective project management techniques including planning, scheduling and project estimation. | Medium | PLO 2, PLO 3, PLO 4 |
| 5. Apply effective quality assurance and maintainability principles. | High | PLO 2 |
| 6. Apply software engineering principles and techniques in a team through planning, designing, implementing and testing of a software system. | High | PLO 1, PLO 2, PLO 3, PLO 4, PLO 5, PLO 6 |

**Teaching Methodologies**

- **Class discussions:** During each class, there will be numerous questions posed by the Instructor to help students engage in the topics and to promote discussion.
- **Class exercises**: Many class discussions will involve interactive hands-on sessions where the students work individually or in groups to solve a given problem.
- **Group project:** A group project will allow students to display a solid grasp of all the software engineering concepts covered throughout the semester.

**Assignments and Group Project:** There will be 3 individual assignments and 1 group project with multiple deliverables. Late submissions will be accepted only up to 2 days late (with a penalty), afterwards zero points will be received automatically. All assignments/deliverables are due at 11:59pm on the due date. Submission will be done through NYU LMS (Brightspace). A 1 hour "free" buffer for technical glitches is provided. Beyond that (and up to 24 hrs), 10% will be deducted from the task grade. Beyond 24hrs and up to 48hrs, 15% will be deducted from the task grade. Students MUST follow the code of conduct and adhere to the standards of academic integrity at NYUAD. Violations will be reported to the Vice Provost for Academic Affairs.

Applications for deadline extensions must be made as early as possible and before the assignment due date by at least 3 working days. Extensions will NOT be granted on or after the due date. Extensions are granted at the sole discretion of the instructor.

[1] See Appendix 1

**Graded Activities**

| Activity Detail | Grade Percentage | Submission Date/Week | Linked to Course Learning Outcome(s) |
|---|---|---|---|
| Class Participation | 5% | Ongoing | 1, 5 |
| Assignments | 20% | Ongoing | 1, 2, 3, 4, 5 |
| Group Project | 25% | Ongoing | 1, 2, 3, 4, 5, 6 |
| Midterm Exam | 25% | Week 7 | 1, 2, 3, 4 |
| Final Exam | 25% | Exam week | 1, 2, 3, 4 |

**Required Bookstore Texts**

- Roger S Pressman, Software Engineering: A Practitioner's Approach, McGraw-Hill Higher Education; 9th edition, Publication date: September 9, 2019. ISBN-10: 0078022126.

**Other Recommended Texts**

- B. Bruegge and A.H. Dutoit, Object-Oriented Software Engineering: Using UML, Patterns, and Java, Pearson, 3rd edition (International), Publication date: 2014. ISBN 978-1292024011.
- I. Sommerville, Software Engineering, Pearson, 10th edition (Global), Publication date: March 24, 2015. ISBN 978-1292096131.

**Academic Policies**

**Class Participation:** ***Graded***. Students are expected to attend all classes and be active participants in class discussions, exercises, and activities. It is essential to engage colleagues with respect in and outside the classroom. Participation will be graded based on 7 randomly selected in-class exercises/activities. To get the full 5% participation, students must have participated in at least 5 of these 7 exercises/activities.

**Re-grading.** Any questions or concerns about marks on a particular assignment must be brought to the attention of the course staff within 7 days of the mark being posted. Otherwise, no past grades will be re-evaluated.

**Course policy on Chat-GPT and AI tools.** It is important that the written work required by the course is yours. You should not use ChatGPT or other AI tools for any purpose other than idea generation. When you use any of these tools, you must include a note describing how you used them with the assignment.

**Grade Distribution**: Students need to obtain a grade of C or better to count the course towards their intended degree for required courses or economics electives. Course percentages will be translated into letter grades based on these intervals: (No grading on a curve in this course)

| A | A- | B+ | B | B- | C+ | C | C- | D | F |
|---|---|---|---|---|---|---|---|---|---|
| [95,100] | [90,95) | [87,90) | [83,87) | [80,83) | [77,80) | [73,77) | [70,73) | [63,70) | [0,63) |

**Integrity**: At NYU Abu Dhabi, a commitment to excellence, fairness, honesty, and respect within and outside the classroom is essential to maintaining the integrity of our community. By accepting membership in this community, students, faculty, and staff take responsibility for demonstrating these values in their own conduct and for recognizing and supporting these values in others. In turn, these values create a campus climate that encourages the free exchange of ideas, promotes scholarly excellence through active and creative thought, and allows community members to achieve and be recognized for achieving their highest potential.

Students should be aware that engaging in behaviors that violate the standards of academic integrity will be subject to review and may face the imposition of penalties in accordance with the procedures set out in the NYUAD policy: https://students.nyuad.nyu.edu/campus-life/student-policies/community-standards-policies/academic-integrity/

In addition, it forbids capturing, reposting, sharing, or distributing **in any form** conversations, opinions, course materials (including presentation slides, quizzes, assignments and exams), or solutions to any of the assessment tasks.

**Moses Center for Student Accessibility**

New York University is committed to providing equal educational opportunity and participation for students with disabilities. CSD works with NYU students to determine appropriate and reasonable accommodations that support equal access to a world-class education. Confidentiality is of the utmost importance. Disability-related information is never disclosed without student permission. Find further information at:

https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html

Contact: mosescsd@nyu.edu

**Mental Health Resources**

As a University student, you may experience a range of issues that can interfere with your ability to perform academically or impact your daily functioning, such as: heightened stress; anxiety; difficulty concentrating; sleep disturbance; strained relationships; grief and loss; personal struggles. If you have any well-being or mental health concerns please visit the Counseling Center on the ground floor of the campus center from 9am-5pm Abu Dhabi time Sunday - Thursday, or schedule an appointment to meet with a counselor by calling: +971 02-628-8100, or emailing: nyuad.healthcenter@nyu.edu. If you require mental health support outside of these hours call NYU's Wellness Exchange hotline at +971 02-628-5555, which is available 24 hours a day, 7 days a week. You can also utilize the Wellness Exchange mobile chat feature, details of which you can find on the student portal.

**Course Schedule**

The instructor reserves the right to slightly change class topics or their order if the class learning pace requires that. Such changes will be announced and updated on the "dynamic" spreadsheet. This spreadsheet will always contain the most up-to-date course schedule and is linked on BritghtSpace. Note that all deadlines are 11:59pm on the specified date (apart from in-class exams or presentations).

**Appendix 1**

Computer Science Major Program Learning Outcomes (PLOs)

PLO 1 Analyze a problem, and identify, define, and verify the appropriate computational tools required to solve it (Knowledge, Skill, Role in Context, Self-development).

PLO 2 Apply up-to-date computational tools necessary in a variety of computing practices (Knowledge, Skill, Autonomy & Responsibility, Self-development).

PLO 3 Implement algorithms as programs using modern computer languages (Knowledge, Skill).

PLO 4 Apply their mathematical knowledge to solve computational problems (Knowledge, Skill, Autonomy & Responsibility, Self-development).

PLO 5 Communicate computer science knowledge both orally and in writing (Skill, Autonomy & Responsibility, Role in Context).

PLO 6 Collaborate in teams (Skill, Autonomy & Responsibility, Role in Context).