CSE 460

Software Analysis and Design

School of Computing and Augmented Intelligence
Fall 2022

Possible changes and updates will only be made in the Canvas Syllabus

General:
Bldg / Room: CDN / 60
Lecture Hours / Days: 09:00 – 10:15 AM / MW
Dates: 08/18 – 12/02 (Session C)
Course portal: Canvs (SLN: 70519)

Instructor:
Hessam S. Sarjoughian
Location: BYENG (Brickyard Engineering) | Office: 406
Days, hours: MW, 10:30 – 11:30 AM; by Appointment
Phone: (480) 965-3983
Email: hss@asu.edu
Web: Personal ; ACIMS

TA:
Sheetal Mohite
Email: smohite3@asu.edu
Location: BYENG 406 (Brickyard Engineering)
Days & hours: TBD

Textbooks:

Required:
- *Object-Oriented Analysis and Design with Applications (OOAD)*, 3rd Ed., G. Booch, et al., Addison Wesley, 2007
- *Software Architecture in Practice (SAP)*, 3rd Ed., L. Bass, P. Clements, R. Kazman, Addison Wesley, 2012

References:
- *The Object-Oriented Thought Process, Edition, M. Weisfeld, Pearson Addison-Wesley, 2019*
- *UML Standards (UMLS)*, https://www.omg.org/spec/UML, https://www.omg.org/spec/UML/2.5.1/PDF
- *The Java Developer's Guide to Eclipse (JDGE),* 5th Ed., J. D'Anjou, S. Fairbrother D. Kehn, J. Kellerman Pat McCarthy, Addison Wesley, 2004
- *Software Modeling and Design: UML, Use Cases, Patterns, and Software Architectures*, H. Gomaa, Cambridge University Press, 2011
- *Design Patterns: Elements of Reusable Object-Oriented Software (DP),* E. Gamma, R. Helm, R. Johnson, J. Vlissides, Addison Wesley, 1995
- *Eclipse Modeling Framework (EMF),* 2nd Edition, D. Steinberg, F. Budinsky, M. Paternostro, E. Merks, Addison Wesley, 2008

Email:
hss@asu.edu and TA; all email correspondences must have a subject line that starts with **CSE460:** followed with some **text** helpful information about the email's content. Emails that don't comply with this requirement will NOT be responded to. Example of a suitable email subject: CSE460: seeking help with exercise #3 in Hw #2.

Emails sent using the Canvas email system are not acceptable.

Lab Facility:
Brickyard building: 214
Days/Hours: 24 hours, 7 days a week. (Access right is required to use the lab.)

Course Description (CSE/ASU catalog): Requirements analysis and design; architecture and patterns; representations of software; formal methods; component-based development; Prerequisite: CSE 360 or equivalent.

Course assignments and activities with dates with the grading policy

The reading assignment is available in Canvas (see the Modules section)

Evaluation Category§	% of total grade	Date/Time§§	Location
Homework	**20%**	**Ongoing**	**Take-home /Gradescope**
Midterm Exam 1	**20%**	**TBD**	**In-class**
Midterm Exam 2	**20%**	**TBD**	**In-class**
Project	**20%**	**November 23**	**Take-home /Gradescope**
Final Exam	**20%**	**Dec 7 (07:30 - 09:20 AM)**	**In-class**

§ If both programming and final exam grades are less than C, then the course final grade will be reduced by one letter grade (e.g., if a student receives D or E for both the programming and the final exam, then his/her course grade is reduced by one letter grade).

§§ Subject to change with reasonable advance notice except for the final exam.

Homework assignments are weighted equally. Each homework assignment is generally due 1 to 2 weeks from the day it is assigned. For each homework assignment, select problems will be graded. **The lowest homework assignment will be dropped.**

Honor's Contract: They are welcomed. Contact instructor if interested by September 16th.

Student success:

- read announcements
- check the Canvas frequently
- attend and engage in every class
- complete assignments by their specified due dates/times
- communicate regularly with your TA, instructor, and peers

Assignment submission:

- **Homework and programming assignments must be submitted to Gradescope. All other electronic methods, including email will NOT be accepted.**
- Due times for all assignment is 11:59 PM on their assigned due dates.
- Homework and programming assignments must be organized and structured clearly following instructions. Failure to do so may result in deductions in grade or ZERO if the answers are not legible. Programming assignments should have README files.
- All questions regarding course materials, assignments, exams, and any other matters related to the course materials must be submitted to Canvas.
- Correspondences that cannot be posted to Canvas, such as related administrative matters, must be sent to hss@asu.edu and TA.

Grading rules:

- Homework and programming: **the grade for each assignment is reduced by 10% per every period ranging from 1 minute to 24 hours after the due date/time** for assigned course activity except exams.

- Homework assignments submitted after their due dates will not be accepted. Grades for such submissions are zero.
- Exams: exams cannot be taken separately except in special circumstances with approved documentation. Please make such arrangements with the instructor at least three business days in advance of any exam date.

Grade appeals:

- **Gradescope** will be used for appeals.
- Only appeals that are submitted **within three days** of the date/time the grades are posted in Gradescope are acceptable.
- In your appeal, you need to clearly justify your answer needing regrading and the source of the grading mistake. Appeals need to be separately made for each question (appeals bundled for multiple questions will not be acceptable).
- Regrade requests are not applicable to automatically graded assignments.

Attendance policy: Participation is crucial to being successful in this course. 100% attendance is assumed. Legitimate absences should be communicated apriori with the instructor. Every student is responsible for all material and class activities covered while being absent. Excused absences related to religious observances/practices that are in accord with ACD 304–04, "Accommodation for Religious Practices". Excused absences related to university-sanctioned events/activities that are in accord with ACD 304–02, "Missed Classes Due to University-Sanctioned Activities".

Classroom behavior: A document named "GroundRules.pdf" detailing appropriate and required conduct is provided in the Assignments section in Canvas.

Software: Astah (http://astah.net/student-license-request) – free for students; All applicable assignments must use this software. **UML specifications written by hand or any other software tool will not be accepted**; such submissions will receive grade zero. Software: The Java™ SE can be used; no other programming language is allowed. The Eclipse IDE or Intellij IDEA can be used for the course project. JRE 11 and JUnit 4.12 can be used.

Document formats: The only approved formats for writing and submitting assignments are listed below; documents submitted in any other format will receive zero.

- Microsoft Word and Microsoft Excel (.docx, .doc, .xlsx, .xls)
- Adobe PDF (.pdf, preferred)
- Compressed files can be submitted in the .zip format only
- Astah (.asta)

Letter Grades: The cut-off points for the letter grades may be relaxed at the discretion of the instructor. Students are responsible for all materials covered and discussed in class, posted on Canvas, or other correspondences.

% total score	≥97	≥93	≥90	≥87	≥83	≥80	≥77	≥70	≥60	<60
Letter grade	**A+**	**A**	**A–**	**B+**	**B**	**B–**	**C+**	**C**	**D**	**E**
Grade points	4.33	4.00	3.76	3.33	3.00	2.67	2.33	2.00	1.00	0.00

Note: Ceasing attendance does not automatically drop you from the course. IF YOU ARE STILL ON THE CLASS ROLL AT THE END OF THE SEMESTER, YOU WILL RECEIVE 0's FOR ANY WORK NOT COMPLETED AND WILL BE GRADED ACCORDINGLY.

Course Material / Copyright Laws: Course content, including lectures, are copyrighted materials and students may not share outside the class, upload to online websites not approved by the instructor, sell, or distribute course content or notes taken during the conduct of the course (see ACD 304-06, "Commercial

Note Taking Services" and ABOR Policy 5-308 F.14 for more information). You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the students first comply with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement

Disability Accommodations: Suitable accommodations will be made for students having disabilities and students should notify the instructor as early as possible if they require same. Such students must be registered with the Disability Resource Center and provide documentation to that effect.

Sexual Discrimination: Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at https://sexualviolenceprevention.asu.edu/faqs.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, https://eoss.asu.edu/counseling, is available if you wish discuss any concerns confidentially and privately.

Academic Integrity and Ethics: The University's Code of Academic Integrity (https://eoss.asu.edu/dos and https://provost.asu.edu/academic-integrity)all work submitted for evaluation, including homework assignment, quizzes, programming project, and exams. The minimum penalty for submitting work that is not your own is an E grade. Note: You are encouraged to discuss class assignments with your instructor, teaching assistant, and fellow students. However, any work submitted as part of course work must be your own work. Fulton Schools of Engineering policy states that any act of cheating to be reported for disciplinary action.

Note: The content of this syllabus is subject to change with reasonable advance notice except for the final exam date and time.

Help: For technical support, use the Help icon in the black global navigation menu in your Canvas course or call the ASU Help Desk at +1-(855) 278-5080. Representatives are available to assist you 24 hours a day, 7 days a week. Additional information is provided in the Canvas Syllabus.

Syllabus Disclaimer: Any information in this syllabus may be subject to change with reasonable advance notice. The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Please remember to check your ASU email and the course website often.

Course Topics & Reading Schedule

	Topic	Course Note Chapters	OOAD Chapters	# of lectures
Object-Oriented Analysis and Design with Applications	Introduction • Course description • Software complexity Supplementary papers	1	Chapter 1: All sections	2
	The Object Model • Basic and advanced elements of the Object Model	2-A 2-B	Chapter 2: All sections	3
	Objects and Classes • Fundamental concepts and life-cycle • Basic structural and behavioral modeling in UML • Classes and objects	3-A 3-B 3-C	Chapter 3: All sections	5
	Classification • Classification categories and Classes, Responsibilities, and Collaborators • Basic behavioral modeling, Use-cases	4-A 4-B	Chapter 4: All sections; Chapter 5, 175-185	2
	UML Specification Languages • Advanced structural modeling • Advanced behavioral modeling	5.1-A 5.1-B 5.2-A 5.2-B	Chapter 5: 147-175, 192-212, 218-231	7
Design Patterns	Software Design Patterns • Concepts & methods • Creational • Behavioral • Structural	1 2 3 4	Lecture Notes	4
Software Architecture in Practice	Architecture Business Cycle • Background and basic concepts	1	Chapter 1: All sections; Preface and 1-2	0.5
	Elements of Software Architecture • Architectural styles, reference models, reference architectures • Architectural structures	2	Chapter 2: All sections	1
	Understanding and Design Quality Attributes • Functional and non-functional quality attributes • Systema and business quality attributes	3	Chapter 3: All sections	1

OOAD: Object Oriented Analysis and Design with Applications, 3rd Edition, G. Booch, et al., Addison Wesley, 2007.
DP: Design Patterns: Elements of Reusable Object-Oriented Software, E. Gamma, R. Helm, R. Johnson, J. Vlissides, Addison Wesley, 1994.
SAP: Software Architecture in Practice (SAP), 3rd Edition., L. Bass, P. Clements, R. Kazman, Addison Wesley, 2012.