COLLEGE OF ENGINEERING, UIC
CS 342, Software Design, CRN 37162, 3 Credit hours.

I. Instructor & Course Details

Mark Hallenbeck
Email address: mhalle5@uic.edu
Drop-In Office Hours (in-person or virtual): email for an appointment
Drop-In Hours location: SEO 1220 or Google Meet

Graduate and Undergraduate TAs:
Follow this link for the current list of TAs and their office hours and location:

https://docs.google.com/spreadsheets/d/1xJCT6G8qhgd9RnnBxo-V-QzoXLv6c53cz3xe0rsTdOU/edit?usp=sharing

You can also navigate to the schedule using the, "Office Hours Schedule", link on the left hand side of our BB course page for the current schedule. You should check this each time you are looking for office hours as hours for your TAs can change during the semester.

Blackboard Course Site:

LINK to course Blackboard site

Students are expected to log into the course site regularly to learn about any developments related to the course, upload assignments, and communicate with classmates. For all technical questions about Blackboard, email the Learning Technology Solutions team at LTS@uic.edu.

Course Modality and Schedule

This course is taught **IN PERSON**, **ON CAMPUS**.
- DAYS and TIMES: Tuesdays and Thursdays from 11:00am – 12:15pm
- LOCATION: Lecture Hall A1

II. Course Information

Catalog Course Description and Prerequisite/Corequisite

Software design principles and practices: Object-oriented design; design patterns; software reuse; testing; event driven programming and concurrency; graphical user interface design and development; Team development. Course Information: Extensive computer use required. Credit is not given for CS 342 if the student has credit for CS 340. Prerequisite(s): CS 251.

Growth Mindset:
Course materials and assignments can be complex and challenging, but they are crucial to your intellectual and personal growth and development. There are times you may need extra help. Students who attend class consistently, complete all assignments, thoughtfully engage with feedback on work, develop good study strategies, visit the tutoring center, and contact faculty when struggling can develop a thorough understanding of the course material and ultimately succeed in the course!

Course Goals and Learning Outcomes

LEARNING OUTCOMES:
- *Students will gain proficiency in the Java programming language.*
- *Students will become familiar with and practice OOP core concepts.*
- *Students will utilize and understand the Maven build system*
- *Students will be able to explain the implementation OOP design patterns and their utility.*
- *Students will be able to create graphical user interfaces and implement event driven programs for such.*
- *Students will understand the necessity for unit testing and gain experience doing so with Junit.*
- *Students will understand the utility of system modeling and gain basic proficiency using UML.*
- *Students will understand and gain basic proficiency networking with Java Sockets.*
- *Students will understand the necessity for Threading and how to implement it safely.*
- *Students will be exposed to and practice basic UI/UX concepts and practices.*

This is a required course in the Computer Science Curriculum

Topics:
- ***Java programming language***
- ***Object oriented programming***
- ***Maven build system***
- ***Event driven programming***
- ***Graphical user interface design and implementation***
- ***FXML***
- ***UI/UX design principles and methods***
- ***Activity and class diagrams***
- ***UML***
- ***Networking and exception handling***
- ***Threads and multi-threaded programing***

Recommended Course Materials

There are no required textbooks or software to purchase for this course. All course materials will be provided, and the software used is open source and free. The topics of this course and Java, the programming language used in this course, are widely documented and additional resources are easily found on the web. For those of you who prefer physical books, the following are good references and can easily be sourced:

> ***Head First Java, 3rd Edition***
> > *By: Kathy Sierra; Bert Bates, Trisha Gee*
> > ***The Java® Language Specification, Java SE 8 Edition***
> > *By: James Gosling; Bill Joy; Guy L. Steele Jr.; Gilad Bracha; Alex Buckley*
>
> ***Head First Design Patterns 2nd Edition***
> > *By: Eric Freeman; Elisabeth Robson*
>
> ***Design Patterns: Elements of Reusable Object-Oriented Software***
> > *By: Erich Gamma; Richard Helm; Ralph Johnson; John Vlissides*
> > *(also known as the "Gang of Four" book)*

Required Technology
Personal laptop computer and access to broadband internet connection. The personal laptop computer should be of sufficient hardware and software requirements to support IDE installation, Java installation, Maven installation, project development and coding in that IDE, the ability to access Blackboard and Piazza and other internet resources.

Software and Java Version

We will be using Java 11 to build projects and homework for this course however you may download any version of Java you like provided it is 11 or greater. I recommend a LTS version like Java 17. You can find it here:
Oracle Site for Java

For development of your programs, you may use any IDE you choose or the terminal.
I recommend that you use Eclipse IDE for Java Developers. You can find it here:
Eclipse IDE for Java Developers

All projects and homework will be configured and built with Maven. You can find it here:
Maven 3.8.4
*A later version of Maven is ok.

For help installing the required software for this class, there is a Installation Guide here:
https://docs.google.com/document/d/1P9JcsHkK0CddK6podZrFOE0D5AdSpyaTf5yEi-pomGY/edit?usp=sharing

This guide was created by past and current TAs as a resource for the students taking this class.

The Eclipse and IntelliJ IDEs comes with built in Maven support. If you are working in the command line you will need to download and install Maven yourself. Keep in mind that IDEs do a lot of optimization and inference when you use them. **Running in your IDE does not guarantee that it will successfully run on the command line with Maven.**

We will test all homework and projects on the command line using Maven 3.8.4 or a more current version. You may develop in any IDE you chose but make sure your homework and projects can be run on the command line using Maven commands. Any homework or project that does not run will result in a zero. If you are unsure about using Maven, come see your TA or Professor.

Respect for Copyright

III. COURSE POLICIES & CLASSROOM EXPECTATIONS

Grading Policy and Point Breakdown

All assignments are graded on a scale of 100 points each. The weights of those assignments for your final grade are as follows:

- *6 Homework's (lowest score is dropped) 5% each for a total of 25% of Total grade.*
- *4 Projects, 9% each for a total of 36% of Total grade.*
- *7 Quizzes (lowest score is dropped) 3% each for a total of 18% of Total grade.*
- *Final Exam, 21% of Total grade.*

There is no curve in this class. Final grades will be calculated using the weights above. Letter grades will be assigned by the following scale:

'A' = 90 or above
'B' = 80 – 89
'C' = 70 – 79
'D' = 60 – 69
'F' = below 60

Policy for Missed or Late Work

Taking into consideration that life circumstances happen, and it is possible you could miss a quiz or homework unintentionally, we drop the lowest score for each at the end of the semester. If it is your first missed quiz or homework, regardless of the situation, it will be dropped.
All projects will have a 24-hour late penalty of 10%.
Missing the final exam will result in a zero for that exam. If you cannot make the day/time of the final exam due to an exam conflict, it is your responsibility to notify the instructor. These situations will be handled following the UIC policy for exam conflicts.
If you cannot make the day/time of the exam for any other reason, you should contact your instructor at least one week in advance and accommodations will be discussed.

Attendance / Participation Policy

Attendance in lectures is expected but not monitored. You are responsible for the material presented live in class. Historically, students who attend the majority of lectures earn higher final grades. Lectures will be recorded and made available to you but will not be re-recorded due to failure of the equipment in the lecture halls.
Please email me if you face an unexpected situation that may impede your attendance, participation in required class and exam sessions, or timely completion of assignments.

Other Course Policies:

Announcements & Class Material:
All announcements will be made in Blackboard. Class materials such as this syllabus, sample code, PDFs of lecture slides will be posted on the class Blackboard site. Blackboard will also be used to post grades on homework, projects and exams. It is your responsibility to continually check BB for new announcements and material.

Office Hours:
Office hours for your professor will be mostly virtual and by appointment Monday - Friday. You should email him directly and then work to find a day/time that works for both of you. We have been doing this for a few semesters now and it seems to work better than picking an arbitrary time that most cannot get to and if you can, you might wait in a line. For your TAs, office hours will be predominately in person with some online office hours as well to accommodate most students and their individual situations.

Piazza, Not Email:
Due to the volume of email we receive, please do not use email for communication — all class-related emails will be ignored. The one exception are matters of a personal nature, in this case you can (and should) email your professor or one of the TAs. Appropriate personal matters include family emergencies, classroom issues, and grading disputes.
To provide assistance, answer questions, and post announcements, we will be using a forum-based web site called Piazza. Here is the link to the home page:

https://piazza.com/uic/fall2023/cs342/home

You should think of Piazza as your primary mechanism for all class-related discussions and questions. Piazza allows students and staff to help one another, reducing the time-to-answer. Your TAs will check Piazza repeatedly each day — you should get in the habit of doing the same. Before posting, please search Piazza as the answer to your question may already be online. When posting, please follow these guidelines:

1. Look before you post — the main advantage of Piazza is that common questions are already answered, so search for an existing answer before you post a question. Posts are categorized to help you search, e.g. "HW".

2. Post publicly — only post privately when asked by the staff, or when it's absolutely necessary (e.g. the question is of a personal nature). Private posts defeat the purpose of piazza, which is answering questions to the benefit of everyone.

3. Ask pointed questions — do not post a big chunk of code and then ask "help, please fix this". Staff and other students are willing to help, but we aren't going to type in that chunk of code to find the error. You need to narrow down the problem, and ask a pointed question, e.g. "on the 3rd line I get this error, I don't understand what that means...".

4.   Post a screenshot — sometimes a picture captures the essence of your question better than text. Piazza allows the posting of images, so don't hesitate to take a screenshot and post; see http://www.take-a-screenshot.org/ .

5.   Don't post your entire answer / code — if you do, you just gave away the answer to the ENTIRE CLASS and will be punished accordingly!

If you must post the entire code, then do so privately --- there's an option to create a private post ("visible to staff only").

Pair Projects:
You will have the option to work on some projects with a partner of your choice. If you decided to work with a partner, you will submit a report detailing how the work was split up between you for each of those projects. The learning curve in this course can be steep and having someone to work with can help. We also realize that some of you do better going solo on projects, and that is ok as well.

Regrade Requests:
For Projects, homework, and quizzes, you will have 7 days from the date your grade is posted to dispute or question the grade for that assignment. I will make an announcement in BB when an assignment is graded and the regrade request period starts. No regrade requests will be accepted beyond 7 days with no exceptions. The procedure is as follows:

1) Contact the TA who graded your assignment to discuss your concerns. You should make a private post in Piazza to do this. The TA that graded that assignment will respond.

2) If after discussing with your TA you still have concerns, you should contact your professor.

Academic Integrity
As a student and member of the UIC community, you are expected to adhere to the Community Standards of academic integrity, accountability, and respect. Please review the UIC Student Disciplinary Policy for additional information.

IV. COURSE SCHEDULE

Follow this link for the current assignment schedule:

https://docs.google.com/spreadsheets/d/1mWOxDH5rTg8Mk5cR_emDfoo6bNGzDXSMKG0H8mcwBUM/edit?usp=sharing

You can also follow the link, "Assignment Schedule", on the lefthand side of our BB course page for an up-to-date schedule of assignments and quizzes. This should help you organize and allocate your time in light of your other course work and responsibilities.

Weekly Schedule of Class Topics, Assignments, Assessments, Due Dates, and Deadlines

Week 1: Class intro, Java intro
Week 2: Coding Java and Building with Maven
Week 3: Generic Programming and Interfaces
Week 4: Unit testing and Iterator design pattern
Week 5: System Modeling, UML, Application Design (UI/UX)
Week 6: Event Driven Programming and JavaFX
Week 7: Networking and Exceptions
Week 8: Threads and Multi-Client Networking
Week 9: Composite Design Pattern and GUI Server/Client
Week 10: FXML and MVC Design Pattern
Week 11: Java Synchronization
Week 12: Decorator and Observer Design Patterns
Week 13: Agile Development and HL Threading
Week 14: Design Sprints and Figma
Week 15: Industry applications and Final exam review
Week 16: Final exam week

Disclaimer
This syllabus is intended to give the student guidance on what may be covered during the semester and will be followed as closely as possible. However, as the instructor, I reserve the right to modify, supplement, and make changes as course needs arise. You should regularly check the assignment schedule, linked here in the syllabus and on our BB course page, for the current assignments and due dates.

V. ACCOMMODATIONS

Disability Accommodation Procedures

UIC is committed to full inclusion and participation of people with disabilities in all aspects of university life. If you face or anticipate disability-related barriers while at UIC, please connect with the Disability Resource Center (DRC) at drc.uic.edu, via email at drc@uic.edu, or call (312) 413-2183 to create a plan for reasonable accommodations. To receive accommodations, you will need to disclose the disability to the DRC, complete an interactive registration process with the DRC, and provide me with a Letter of Accommodation (LOA). Upon receipt of an LOA, I will gladly work with you and the DRC to implement approved accommodations.

Religious Accommodations

Following campus policy, if you wish to observe religious holidays, you must notify me by the tenth day of the semester. If the religious holiday is observed on or before the tenth day of the semester, you must notify me at least five days before you will be absent. Please submit this form by email with the subject heading: **"YOUR NAME: Requesting Religious Accommodation."**

VI. CLASSROOM ENVIRONMENT

Inclusive Community

UIC values diversity and inclusion. Regardless of age, disability, ethnicity, race, gender, gender identity, sexual orientation, socioeconomic status, geographic background, religion, political ideology, language, or culture, we expect all members of this class to contribute to a respectful, welcoming, and inclusive environment for every other member of our class. If aspects of this course result in barriers to your inclusion, engagement, accurate assessment, or achievement, please notify me as soon as possible.

Name and Pronoun Use

If your name does not match the name on my class roster, please let me know as soon as possible. My pronouns are *he/him*. I welcome your pronouns if you would like to share them with me. For more information about pronouns, see this page: https://www.mypronouns.org/what-and-why.

Community Agreement/Classroom Conduct Policy

- Be present by turning off cell phones and removing yourself from other distractions.
- Be respectful of the learning space and community. For example, no side conversations or unnecessary disruptions.

- Use preferred names and gender pronouns.
- Assume goodwill in all interactions, even in disagreement.
- Facilitate dialogue and value the free and safe exchange of ideas.
- Try not to make assumptions, have an open mind, seek to understand, and not judge.
- Approach discussion, challenges, and different perspectives as an opportunity to "think out loud," learn something new, and understand the concepts or experiences that guide other people's thinking.
- Debate the concepts, not the person.
- Be gracious and open to change when your ideas, arguments, or positions do not work or are proven wrong.
- Be willing to work together and share helpful study strategies.
- Be mindful of one another's privacy, and do not invite outsiders into our classroom.

VII. RESOURCES: Academic Success, Wellness, and Safety

We all need the help and the support of our UIC community. Please visit my **office hours** for course consultation and other academic or research topics. For additional assistance, please contact your assigned college advisor and visit the support services available to all UIC students.

Academic Success
- UIC Tutoring Resources
- College of Engineering tutoring program
- Equity and Inclusion in Engineering Program
- UIC Library and UIC Library Research Guides.
- Offices supporting the UIC Undergraduate Experience and Academic Programs.
- Student Guide for Information Technology

Wellness
- **Counseling Services**: You may seek free and confidential services from the Counseling Center at https://counseling.uic.edu/.
- Access U&I Care Program for assistance with personal hardships.
- **Campus Advocacy Network**: Under Title IX, you have the right to an education free from any form of gender-based violence or discrimination. To make a report, email TitleIX@uic.edu. For more information or confidential victim services and advocacy, visit UIC's Campus Advocacy Network at http://can.uic.edu/.

Safety
- UIC Safe App—PLEASE DOWNLOAD FOR YOUR SAFETY!
- UIC Safety Tips and Resources
- Night Ride

- [Emergency Communications](): By dialing 5-5555 from a campus phone, you can summon the Police or Fire for any on-campus emergency. You may also set up the complete number, (312) 355-5555, on speed dial on your cell phone.