
Software Construction and User Interfaces (SE/ComS 319)

Ali Jannesari

Department of Computer Science

Iowa State University, Spring 2019

ADMINISTRATION AND CLASS INFORMATION

Outline

- Administrative stuff
 - Who I am, TAs, general information, etc.
 - Course organization and syllabus
 - Schedule and structure of this class

About me

- Instructor: Ali Jannesari (Assist. Prof. at CS department)
- My background: PhD at KIT (Germany), RWTH Aachen, Bosch Research Center, TU Darmstadt, UC Berkeley and ISU
- Research: Software engineering, systems, parallelism, deep learning/machine learning.
- Teaching: I enjoy interactive classes and discussions
- Contact me
 - jannesar@iastate.edu
 - Atanasoff, Room 110, office hours: M 4-5PM
 - Emails to me regarding the class must include "319" in subject line.

TAs

- TAs for Coms 319:
 - Shibbir Ahmed, shibbir@iastate.edu
 - Subrahmanyam Vaddi, svaddi@iastate.edu
 - Aishwarya Sarkar, asarkar1@iastate.edu
 - Bagies Taghreed, tbagies@iastate.edu
 - Kyungtae Ko kyungtae@iastate.edu
 - Mohan Theru venkytm@iastate.edu
- TAs office hours
 - Tue, Wed, Thurs. 1-2pm, B22 in Atanasoff Building
- Computer Science Help Center (Help Room for your Homework)
 - MWF 10am-6pm & Thurs 6pm-10pm in 1200 Communications Building
 - [Help Room Course Coverage Spring 2019.xlsx](#)

Your background?

- How good are you in programming?
 - Java, C/C++, Python, Web programming: HTML, JS, PHP?
 - How many programs have you written?
 - Which programming languages do you use?, which IDEs?
 - How big are your programs? 100 LOC? 1k? 5k?
 - How familiar are you with OO and UML?
 - Are you familiar with agile software development methods (e.g. XP, Scrum, etc.)?
 - Internships?
 - What are your goals after graduation ?
 - How will this course help you achieve your goals?
-

General information

- <https://canvas.iastate.edu/courses/58291>
- Gives you access to the course material, etc.
- Class schedule
 - Lecture: Monday, Wednesday, Friday 11:00 – 11:50 AM
 - Lab activities and project meetings: Pearson Labs
105/109/108/113/158 for **Friday classes (TBA)**
- Email communication must start with "319:" in the subject line
- Prerequisite:
 - COM S 228 (Pre-Req Waiver Form)
 - Knowledge of programming (Java)

Course description

- Basic theory of grammars, parsing. Language paradigms. State transition and table-based software design. Review of principles of object orientation, object oriented analysis using UML. Frameworks and APIs. User interface architecture, evaluation of user interface. Design of windows, menus, and commands. Introduction to formal specification and model-based software design. Introduction to domain-specific software engineering.

Course learning objectives

- Be familiar with web user Interfaces and event-driven programming (client/server, JavaScript, Node.js, PHP, frameworks, etc.)
- Be familiar with software process, OO analysis and UML
- Be familiar with software design principles, design patterns and architectural styles.
- Be introduced to with parallelism and concurrency concepts such as threads and multi-threaded programs
- Be introduced to software testing, test-driven development, agile methods and eXtreme Programming (XP).
- Be introduced to language grammar, lexer and parser

Course overview (tentative)

Week#	MON	Tentative Schedule
Week 1	Mon 1/14	Introduction and basics, threads, client/server programs
Week 2	Mon 1/21	Review of software development process, user interfaces
Week 3	Mon 1/28	Event-driven programming, user interfaces and web programming
Week 4	Mon 2/4	Event-driven programming, user interfaces and web programming
Week 5	Mon 2/11	Event-driven programming, user interfaces and web programming
Week 6	Mon 2/18	eXtreme Programming (XP – agile methods) and test-driven development
Week 7	Mon 2/25	Review of Object Orientation, OO analysis
Week 8	Mon 3/4	System modeling and UML
Week 9	Mon 3/11	UML diagrams
Week 10	Mon 3/18	Spring break
Week 11	Mon 3/25	Architectural styles
Week 12	Mon 4/1	Design Patterns
Week 13	Mon 4/8	Software Testing
Week 14	Mon 4/15	Parallel Software Construction
Week 15	Mon 4/22	Basic Theory of Grammars and Language Paradigms
Week 16	Mon 4/29	No Class (reading period)
Week 17	Mon 5/6	Final Exam

Course outcome (ABET outcome)

- 1. An ability to analyze a complex computing problem, and to apply principles of computing and other relevant disciplines to identify solutions.
- 2. An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- 5. An ability to function effectively **as a member or leader of a team** engaged in activities appropriate to the program's discipline.
- 6. An ability to apply **computer science theory** and **software development fundamentals** to produce computing-based solutions.

What you need to do?

- Attending lectures/labs and project meetings **5%**
 - Pearson Labs 105/109/108/113/158 for Friday classes (TBA)
- Lab activities **5%**
- Quizzes **10%**
- Homework assignments **20%**
- A main group project (portfolio) **30%**
 - 5% proposal; 10% final presentation/demonstration; 15% project content
 - Milestones and checkpoints
- Final exam **30%**
- In case you are going to drop this course, do it soon please.

Quizzes

- ~10 minutes @ every week (Web-based using Canvas during lecture)
- 1st quiz in January
- Close-book, close-note
- Cover lectures and lab activities
- 1 point for each quiz, 10% of your overall grades!

Assignments

- Homework assignments
 - Problems for you to do (individual)
 - Code and explanations (comment your code)
 - **Mandatory**
 - TBA (including report format and submission check list)
 - Selected solutions for code walk, explanation and demonstration during lab sessions

Group project (Portfolio)

- Do it in team (4 students)!
- Grading of group project (**30% of your grade**):
 - Individual performance assessed
- We will look for all of the below:
 - Evidence of vigorous interactions with materials (questions, insights)
 - Exploration of new and complex issues (examples, explanations)
 - Evidence of working at higher levels of blooms taxonomy: analysis, evaluation, synthesis.
 - Evidence of teamwork
- These requirements will be explained later as well.
- **Build your team as early as possible!**

Final Exam

- Final exam
 - During the **exam week**
 - 30% of your final grades
- Exams will cover material from class, labs, assignments and projects

Miscellaneous

- A lecture day to be assigned for project works and lab activities @Pearson lab rooms
 - Lab activities and project meetings: Pearson Labs 105/109/108/113/158 for **Friday classes (TBA)**; 5% of your grade
- Start early, look for online materials, tutorials on web programming, JavaScript, Node.js, agile software development XP (eXtreme Programming) and Test-driven development
- In case you copy/paste any code available in public domain you need to cite it in your source code!
- Slides will be available in PDF on Canvas
 - Only for the purpose of this class. **Redistribution not permitted!**



Questions?

- Thank you!