COMS 309
Software Development Practices
2020 Spring

SIMANTA MITRA, PH.D.
DEPARTMENT OF COMPUTER SCIENCE
IOWA STATE UNIVERSITY

Com S 309. Software Development Practices. (3-1) Cr. 3. F.S.
Prereq: Com S 228 with C- or better..
A practical introduction to methods for managing software development. *Process models, requirements analysis, structured and object-oriented design, coding, testing, maintenance, cost and schedule estimation, metrics*. Programming projects.

Teaching Staff Information

Simanta Mitra,103 Atanasoff, smitra@iastate.edu

Emails must include "309" in subject line or will be ignored.

Urgent help: 515-650-2255

TA NAME	Email
Kumara Sri Harsha Vajjhala	harshavk@iastate.edu
Ye Tian	yetian@iastate.edu
Ben Smith	bensmith@iastate.edu
Jeremy Roghair	jroghair@iastate.edu
Souradeep Bhowmik	sbhowmik@iastate.edu
Sumanth Kaliki	sumanth@iastate.edu
Tenson Cai	tensonc@iastate.edu
Vivek Bengre	bvivek2@iastate.edu
Nischay Venkatram	nischayv@iastate.edu

Course Organization-1

Note that the reasons for course being organized this way can be found in the 309 Orientation FAQ. This includes how the course fits into the overall curriculum.

1. **Team formation**
   - ❑ Course is organized around a 4-member team project.
   - ❑ Teams will be formed first day of class.
   - ❑ Teams will propose projects – subject to course constraints. Most problems manifest themselves only on larger/complex projects - we require the projects be somewhat complex.
   - ❑ Teams will be assigned Tas in second week of class.
2. **Team Meetings**
   - ❑ Teams will reserve times to meet with each other
   - ❑ Teams with also reserve times to meet with their TAs for weekly project status and for five project demos.

Course Organization-2

1. **Individual Work for Project**
   - ❑ Students will work on experiments and tutorials to learn how to use tools, libraries, technologies, frameworks etc.
   - ❑ Students will work on developing parts of code for their team project and interact with team members to make the pieces of code work together.
2. **Individual Work for Class Assignments**
   - ❑ The class materials are not very difficult – so readings will be assigned. There is no assigned textbook for the class.
   - ❑ Students will do weekly class readings as assigned.
   - ❑ Students will do pre- and post- quizzes (plus frequent surveys)
3. **In-class (meets on 2:10-3:00 MWF Hoover 2055)**
   - ❑ Discussion of technologies/tools.
   - ❑ Clarification of difficult parts.
   - ❑ Working on worksheets to learn the more difficult parts.
   - ❑ Help sessions for struggling teams.

Course Organization-3

1. **Help (out-of-class and in-class)**
   - ❑ Technical questions – ask on Piazza
   - ❑ Urgent help – text 515-650-2255
   - ❑ There will be NO recitations.
   - ❑ Some of class sessions will be devoted to helping out on topical issues.
   - ❑ On an as-needed basis, there will be twice-a-week discord sessions (voice/text) to help out on issues faced by the class.
   - ❑ All "people" issues with teams – talk directly to the instructor (from day one).
   - ❑ It may not be possible to provide help right before demonstrations (particularly if you start coding really late).

Course Organization-4

Purpose	Name of App/Tool
Course Learning Materials	Canvas https://canvas.iastate.edu/courses/67135
Course Assignments, Quizzes, Submissions, Grades	Canvas
Grade Calculations	http://web.cs.iastate.edu/~smitra/309/grades/ (not ready yet for this semester)
Technical FAQ	Canvas
309 Orientation FAQ	Canvas
309 Admin FAQ	Canvas
Announcements and Emails	Canvas + Piazza
Course Discussions and Q/A	Piazza https://piazza.com/class/k4reaaix50f6a
Team Status Dashboard	Piazza. Updated after every Demo.
Team Project Planning, Monitoring	Trello trello.com Later in semester: gitlab
Team Source code sharing and version control	Gitlab Server https://git.linux.iastate.edu/users/sign_in Git Clients Example: https://www.sourcetreeapp.com/ Also, IDEs will work directly with git respositories (like Eclipse, Android Studio etc).
Team Documents	gitlab
Team Web and DB Server	Servers will be provided. Example server name: coms-309-sr-3.misc.iastate.edu These are linux based, have mysql database -- and will be used to host team's springboot server
Intra-Team Communication (including Teaching Assistant)	Slack https://slack.com/signin Discord https://discordapp.com/ (preferred)
Some Help Sessions	Discord https://discordapp.com/ (voice/text) <JOIN THIS ONE: https://discord.gg/N2gwxV> Zoom https://iastate.zoom.us/ (screen sharing also)

Course Organization-5

1. Each student must RESERVE adequate time and energy for working with your team on the class project. Block times on calendar TODAY!
2. For UG courses, each credit requires 3 hrs outside class work – i.e. reserve at least **9 hours total outside class for this course per week**.

#1. Major Goal

To transition from programmer to Software Engineer and become **knowledgeable** about (and practice) common software engineering techniques and concepts.

#1. Design/Code for maintainability (i.e. modular design)

#2. Major Goal

To learn how to work effectively with a team and to hold each other accountable for contributing to the project.

Achieving Course Goals

To achieve course goals, students will work on development of a reasonably sized project from concept to release.

- have followed **good practices** for the different stages of the development process
- **used software engineering tools** for development and design including IDE, Source-Control, Modeling, Test execution, and coverage.

Course Outcomes

(A) An ability to apply knowledge of computing and mathematics appropriate to the discipline.

(B) An ability to analyze a problem and identify and define the computing requirements appropriate to its solution.

(C) An ability to design, implement, and evaluate a computer-based system, process, component or program to meet desired needs.

(D) An ability to function effectively on teams to accomplish a common goal.

(E) An ability to understand professional, ethical, legal, security, and social issues and responsibilities.

(F) An ability to communicate effectively with a range of audiences.

(G) An ability to analyze the local and global impact of computing on individuals, organizations, and society.

(H) An ability to engage in continuing professional development.

(I) An ability to use current techniques, skills, and tools necessary for computing practices.

Tentative Schedule

		COM S 309 SPR 2020				
WK	Mon Week	Lec-Mon	Lec-Wed	DEADLINES	Mon Week	WK
1	13-Jan			1/14 T teams crt 1/15 W teams freeze 1/19 U proposals due	13-Jan	1
2	20-Jan	HOLIDAY		1/25 F freeze proposals	20-Jan	2
3	27-Jan	DEMO-1: SET UP DEMO, NO CLASS 1) Git usage, 2) Client Side Exp, 3) Server Exp		2/02 U screensketches due	27-Jan	3
4	3-Feb				3-Feb	4
5	10-Feb				10-Feb	5
6	17-Feb	DEMO-2: BASELINE DEMO NO CLASS Use of Merge Requests, Basic. Commn betwn Server/Client/DB			17-Feb	6
7	24-Feb				24-Feb	7
8	2-Mar				2-Mar	8
9	9-Mar	DEMO-3: NO CLASS MAJOR use cases, Use of CI/CD, Use of Mockito		3/13 R Block Diagrams + API (Version-1)	9-Mar	9
10	16-Mar	SPRING BREAK			16-Mar	10
11	23-Mar				23-Mar	11
12	30-Mar				30-Mar	12
13	6-Apr	DEMO-4: NO CLASS MAJOR use cases. Use of websockets			6-Apr	13
14	13-Apr				13-Apr	14
15	20-Apr			4/23 R Block Diagram + API (Version-2)	20-Apr	15
16	27-Apr	DEMO-5: FINAL DEMO NO CLASS	BEST PROJECTS demos	4/29 W Best Proj Demos 4/29 W Posters Due 5/01 F Final report + 5min video	27-Apr	16
17	4-May	Feedback Session Wed May 6th 2:15 Hoover 2055			4-May	17

Tentative grading policy-1

1. **Grading Scale (we first give letter grade and THEN number grade)**
   1. Excellent: >= 90 **A-** >=93 **A**
   2. Good: >= 80 **B-** >= 83 **B** >= 87 **B+**
   3. Average: >= 70 **C-** >= 73 **C** >= 77 **C+**
   4. Poor: >= 60 **D-** >= 63 **D** >= 67 **D+**
   5. **F: 0 to < 60**

2. Quizzes, Worksheets are worth 15%

3. Project is worth 85%.
   - 15% Documents
   - 70% Code <Note not all demos are equally weighted>

Demo-1 05% Demo-2 15% Demo-3 20% Demo-4 15% Demo-5 15%

Tentative grading policy-2

Grade Restrictions

1. **To pass class, MUST pass demos 3,4,5 (**at least C- i.e. >= 70%)
2. Getting a grade below A in any TWO demos will LIMIT your overall grade to below A (regardless of total points obtained in the course).
3. Getting a grade of (*) in three demos will LIMIT your overall grade to a (*) (regardless of total points obtained).
4. B grade means good work. No one can get a B grade if they have ***repeatedly*** exhibited poor team-work. Additional penalties will apply based on situation. This includes (but is not limited to):
   - ❑ regularly missing/late at team meetings (incl. mtgs with TA).
   - ❑ starting late on coding work.
   - ❑ keeping TA/team in the dark about work (i.e. not pushing code weekly basis).
   - ❑ being rude or disrespectful or contributing to a toxic team environment.

Academic Dishonesty

- The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.
- Code/documents that you submit as your own – must have been created by you.
- http://www.dso.iastate.edu/ja/academic/misconduct.html

Project Code

- Your team must come up with your own idea and implement it from scratch. If you use ANY libraries and frameworks, you must get it approved by us AHEAD of time.
- When you show code to TA – make sure it is code that YOU wrote (and not libraries or what others wrote). No credit for non-code work (like css, html, image creation etc)

Disability Accommodation

- Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact me to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with (instructor name), you will need to obtain a SAAR form with recommendations for accommodations from the Disability Resources Office, located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu . Retroactive requests for accommodations will not be honored.

Dead Week

- This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook http://www.provost.iastate.edu/resources/faculty-handbook .

Harassment and Discrimination

- Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation

- If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.