Detailed Course Plan

Course Title: Software Project Lab-II
Course Code: SWE 4404
4th Semester, Software Engineering Program
Version 1.1

Course Description

Software Project Lab-II (SPL-II) is a 1.5 credits lab-only course in the 4th semester of the software engineering program. In this course, student teams consisting of no more than four students will develop software solutions for real life problems under the guidance of a faculty member based on prior experience in SPL-I, and optional courses. There will be a SPL committee and guest lecturers to conduct a bi-weekly discussion session with all the SPL-IL team.

Each team will meet with their supervisor throughout the semester to discuss the scope of the project, expectations for design reviews, and any issues raised at the time of implementation. Topics covered in bi-weekly sessions include how to initiate a project, designing concept, implementation, proper code structure, using version control system, etc. Guest lectures from industry will provide additional expertise in the software engineering domain. All teams will be expected to present a working project, a presentation, and an overall report to the supervisor and SPL committee. The overall score will depend on assessments made by judges regarding the concluding presentation, evaluations by the supervisor at various design milestones (including project choice, software requirement analysis, agile implementation, unit testing, and version control usage), the operational project, the oral presentation, and the comprehensive report.

Prerequisite

Must have to complete SWE 4304.

Course Objective

The purpose of this course is to:

- Learn the fundamental concepts of approaching real life problems with software engineering solutions.
- Enhance skill in requirement gathering and analysis, design, agile development, testing, deployment.
- Learn how to apply theoretical concepts effectively (object oriented concept, design principles, code refactoring, continuous integration etc).

Expected Course Outcomes

By completing this project, the students are expected to learn -

- To develop software solutions with best industry practices.
- To delegate work among team members to capitalize on individual strengths.
- To effectively communicate with team members.
- Apply the appropriate engineering concepts to solve real world problems.
- Critical analysis of literature and technology.

Topics Covered

Industry practices, application, and consolidation of skills learned in the SWE curriculum (requirement analysis and gathering, brainstorming, planning, designing, agile implementation, and documentation).

Relationship of the Course to Program Outcomes

- Ability to apply knowledge of software engineering fundamentals and an engineering specialization to the solution of software engineering problems.
- Ability to identify, formulate, and analyze complex Computer Science and Engineering problems in the areas of hardware, software, and applications to reach significant conclusions by applying computer science and Engineering principles.
- Ability to design a system, component, or process to meet desired needs within realistic constraints.
- Apply reasoning informed by contextual knowledge to assess societal, health, safety and cultural issues and the consequent responsibilities relevant to professional engineering practice in system development and solutions to complex engineering problems related to system fundamentals, software development, networking, and communication.
- Ability to select and apply state of the art tools and techniques in designing, developing, and testing a computing system or its components.
- Ability to function as an individual and as a team player or leader in software development teams and strive towards achieving a common goal.
- Ability to communicate effectively with the software engineering community. Be able to comprehend and write effective reports, design documentation, make effective presentations, and give and receive clear instructions.

Activities

Group Formation

Deadline: First week of the semester.

The teams should have at least 3 members or at most 4 members.

Supervisor Selection

Deadline: Second week of the semester.

It is the responsibility of the groups to find their supervisors according to their interests and the expertise of the supervisors. Each supervisor will be affiliated with an additional supervisor who will be from a company. There will be an interview with the institutional supervisor and industry supervisor for accepting each team.

Team Meetings

Frequency: At least once a week with the institutional supervisor (physically) and bi-weekly with the industry supervisor (physically or virtually).

The teams must have at least one meeting a week with the institutional supervisor. The teams will be given a sheet where meeting notes will be written down, and the institutional supervisor will sign after each meeting. The institutional supervisor will also note on that sheet whether any of the students were absent or not and ensure whether they sit with the industry supervisor regularly or not as per instruction. These meetings will be used as attendance for the course.

The DP-I committee will check the meeting notes before each presentation to keep track of attendance. The meeting notes must be submitted to the department office after the end of the semester.

Class/Laboratory Schedule

Duration: Two and half hours of discussion sessions

Frequency: Bi-weekly session with an institutional instructor or industry expert, alternatively.

Students will be attending these sessions to learn how to approach a problem, project design, and implementation. Guest experts from industry will provide additional expertise in the software engineering domain.

Draft Proposal Submission

Deadline: Three weeks after the start of the semester. Students will brainstorm for identifying a real world problem and their potential software based solution in their selected domain under

the guidance of their both supervisors. The draft proposal should be submitted to the supervisors.

Final Proposal Submission

Deadline: Fourth week of the semester.

The final version of the proposal should be submitted to the supervisors and DP-I committee. The proposal should include at least the followings -

- Title of the project
- Name of supervisors
- List of team members
- Problem Statement
- Potential Solution
- Key features of the project, mostly use-case descriptions (Diagrams not necessary).
- Tools and technology
- Application domain
- Proposed Timeline

Progress Presentation

Schedule: One week after the mid-semester exam.

This will be a formal presentation where faculty members and industry supervisors will assess the progress of the project.

***For detailed guideline please check further attachment.

Final Presentation

Schedule: One week before the final exam

This will be the final formal presentation where faculty members and industry supervisors will evaluate the final product.

***For detailed guidelines please check further attachment.

Final Project and Report Submission

Schedule: One week the before the final exam

The final version of the project (source code) and an overall project report should be submitted to the supervisors and the DP-I committee. The report should include at least the followings -

- Title of the project
- Names of supervisors
- List of team members
- Problem Statement
- Potential Solution
- Implemented Features

- Tools and Technology
- Application Domain
- Project Timeline
- Contribution
- Future work
- Attach the repository link

***Detailed Weekly Schedule is provided in the further attachment.

Technical Requirements

Source Control Tools

The project's development must be done using a source code control tool like Git. This will have the following benefits

- This is standard industry practice
- It will be easy for the members to work in parallel.

Some sessions will be conducted for all students to train them about the basics of the source control tool.

The source code must be submitted through the source control platform. Any other method of source control submission will not be accepted. For example, copying from a flash drive, downloading from online storage will not be accepted. Additionally, the project repository should have a readme file that contains information on how to use the software.

Issue Tracker Tools

Each team should use an issue tracker to keep track of issues, which can include bugs, defects, feature requests, enhancements, and other tasks related to the software project. Each issue is documented with relevant details such as its description, severity, priority, status, and associated components.

Platforms, Frameworks and Languages

This project can be developed for any platform (e.g., web, mobile, desktop, embedded system, hybrid etc) with any language (e.g., C#, Java, Python, JavaScript etc) using any framework and libraries (e.g., JavaFX, .NET web API, Spring, Django, NodeJs, Angular, React, Flutter). Game engines can be used.

Submissions

Printed Submissions

Printed documents must be submitted to the supervisors and DP committee. The following items are required to be submitted.

1. Meeting notes

2. Final Proposal
3. Project Report

Electronic Submissions

All electronic documents must be included in the source code repository. Here is the list of items to be submitted.

1. Source code in the */code* folder
2. Final proposal in */doc/proposal.pdf*
3. Progress presentation slide in */doc/progress-presentation.**
4. Final presentation slide in */doc/final-presentation.**
5. Project report in */doc/project-report.pdf*

* Presentations are accepted in any common format.

Assessment

The assessment of the course is broken down into the following criteria -

#	Criteria	Marks	Assessment type	Assessed by
1	**Proposal Submission**	**5**	**Team**	**Supervisors and committee**
2	**Presentation**	**35**		
2.1	Proposal Presentation	5	**Team**	**Faculty members**
2.2	Progress Presentation	10	**Individual**	**Faculty members**
2.3	Final Presentation	20	**Individual**	**Faculty members**
3	**Supervisor Assessment**	**40**	**Individual**	
4	**Source code and Report Submission**	**20**	**Team**	**Supervisors and committee**
	TOTAL	**100**		

Attachment#01 - Proposal Presentation Guidelines	
Course Code	SWE 4404
Course Title	Software Project Lab-II
Date	1 week after the midterm examination
Starts at	2:30 pm
Time per Team	05 minutes
Q/A	As per necessity
Number of Teams	20
Sequence	Teams will be called in random order
Presentation Content	- Project title, Team members' info(name,ID) - Brief Overview of the Project (to give audience the context) - Application - Features - Tools and Technology - Approximate Project Timeline
During the presentation	- Single members can present throughout the whole timeslot. There won't be any mark for individual performance. However, involvement of all members is appreciated. - Make the presentation consistent, avoid large paragraphs. - Don't reveal information about Supervisor (unless asked)
Caution	- Time will be strictly maintained.So practice again and again. - Even if you feel that your demo/presentation will take more than the allocated time, firstly show the most important things within the timeline. You can provide details later if asked by judges.

Attachment#02 - Progress Presentation Guidelines	
Course Code	SWE 4404
Course Title	Software Project Lab-II
Date	1 week after the midterm examination
Starts at	2:30 pm
Time per Team	05 minutes
Q/A	As per necessity
Number of Teams	20
Sequence	Teams will be called in random order
Presentation Content	- Project title, Team members' info(name,ID) - Brief Overview of the Project (to give audience the context) - Application - Features - Tools and Technology - Project Timeline with current progress - Database Design - What is the current status of the project compared to the timeline - Demonstration of the progress
During the presentation	- Single members can present throughout the whole timeslot. There won't be any mark for individual performance. However, involvement of all members is appreciated. - Make the presentation consistent, avoid large paragraphs. - Don't reveal information about Supervisor (unless asked)
Caution	- Time will be strictly maintained.So practice again and again. - Even if you feel that your demo/presentation will take more than the allocated time, firstly show the most important things within the timeline. You can provide details later if asked by judges.

Attachment#03 - Final Presentation Guidelines	
Course Code	SWE 4404
Course Title	Software Project Lab-II
Date	1 week before the final examination
Starts at	8:30 am
Time per Team	8 minutes
Q/A	As per necessity
Number of Teams	20
Sequence	Teams will be called in random order
Presentation Content	- Project title, Team members' info (name,ID) - Brief Overview of the Project (to give audience the context) - Application - Features - Tools and Technology - Project Timeline - Demonstration of the final project
During the presentation	- Every member should be involved in the presentation, and they should clarify their role in developing the project during the presentation. - Make the presentation concise, avoid large paragraphs. - Don't reveal information about the supervisor (unless asked). - Implemented and dropped features (According to the mentioned features in progress presentation) should be mentioned. - During the presentation, you should explain which parts of your project were completed before the progress presentation and after the progress presentation. - Please mention the use of any templates (if applicable) - Demonstration of the final project
Caution	- Time will be strictly maintained. So practice again and again. - Even if you feel that your demo/presentation will take more than the allocated time, first show the most important things within the timeline. You can provide details later if asked by judges. - Add your git repo link in 'Project Source (Groups Tab)' as well as Project project proposal, Final Presentation Slides, and SRS (Google Drive Sharable Link).

* For any confusion or further queries contact with any of the following person:

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