**Palestine Polytechnic University**

**College of Administrative Sciences and Informatics**

Second Semester 2016

**Course: Software Engineering**   **Credit Hours:** 3

**Time and Location:** Monday, Wednesday 11- 12:30

**Instructor**: Dr. Nancy Ariji

**E-mail:** nalriji@ppu.edu

TA: Rashad Qareash

**Text Book**

**Software Engineering**, 8th Edition, Ian Sommerville, 2006, Addison Wesley, ISBN 0-321-31379-8.

**Course Description**

This course covers the software development process, from requirements elicitation and analysis, through specification and design, to implementation, integration, testing, and maintenance (evolution). A variety of concepts, principles, techniques, and tools are presented, encompassing topics such as software processes, project management, people management, software requirements, system models, user interface design, verification and validation, and software evolution.

Software Engineering course adapt Community-Based Learning (CBL) were students are expected to help the community by providing software design that could be implemented and used in different places that belong to the "Health sector" in Metropolitan Hebron, such as hospitals.

Community-based learning deliberately integrates community service activities with educational objectives, it is NOT the equivalent of Voluntarism but fills a real need in the community. Students perform a valuable, significant, and necessary service which has real consequences to the community.

**Course objectives**

Introduce to the students a variety of concepts, principles, techniques, and tools encompassing topics such as software processes, project management, people management, software requirements, system models, architectural and detailed design, user interface design, programming practices, verification and validation, and software

evolution. Although the emphasis will be on modern approaches some more traditional software engineering techniques will also be discussed.

**Intended Learning Outcomes**

After completing the course attendees will be able to:

* Present engineering issues that form the background to developing complex and evolving software-intensive systems.
* Plan and deliver an effective software engineering process, based on knowledge of widely used development lifecycle models.
* Employ group working skills including general organization, planning and time management and inter-group negotiation.
* Capture, document and analyze requirements.
* Translate a requirements specification into an implementable design, following a structured and organized process.
* Design UML, along with design strategies such as defining a software architecture, separation of concerns and design patterns.
* Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing.

**Teaching Method**

In the earlier part of the semester, classroom sessions will typically begin with a lecture, setting out conceptual ideas and issues. Some lectures will typically be followed by in-class exercises carried out in small groups, and take-home assignments. The 7th week is start of conducting the course as CBL.

Students are divided into groups to serve the following organizations

1. Al Ahli Hospital
2. Al Meezan Hospital
3. Red Crescent Association in Yatta
4. Hebron Directorate of Health Affairs
5. Dura Directorate of Health Affairs

Where students visit these location as groups many times to collect requirements for the software that they will design/ upgrade. Then each group is in charge of implementing the principles they have learned in the lecturing part of the course to come up for software idea that later on can be implemented and deployed in these organizations.

CBL project is divided into phases where each group should deliver report regarding each phase:

* Feasibility Study
* Requirement gathering
* System Analysis
* Software Design
* Interface
* Testing

**Course Calendar**

|  |  |  |
| --- | --- | --- |
| **Topics** | **Chapter** | **Hourse** |
| Software Engineering Fundamentals | 1, 3, 4 |  6 hours |
| Project Management  | 5, 29 | 4 |
| Software Requirements | 6 | 3 |
| Requirements Engineering process | 7 | 3 |
| System Models  | 8 | 3 |
| User Interface Design  | 16 | 3 |
| Software Reuse  | 18 | 3 |
| Verification and Validation  | 22 | 3 |
| Presentations |  | 3 |

**Course Policies:**

* **University policies:** The student should know all university policies related to his study, published by the registrar's office.
* **Attendance policy:** Regular attendance is required at all class meetings, the instructor will be the last one enters the class.
* **Missed Exams:** No make-up exams should be given. Excuses must be to the student's academic supervisor, he has the right to accept or deny the student's petitions.
* **Homework's and reports:** Homework's and reports must be submitted on the due date, no late homework's or reports can be accepted.

**Academic dishonesty policy:** You are expected to read and understand the academic dishonesty policy published by the registrar's office.

**Cumulative achievement as follow:**

* Midterm 20%
* Reports , assignments 15%
* CBL project 30%
* Final exam: 35%

 **Students are graded on the project they should deliver and present, not on the service.**

**Students should be able to start the CBL project starting from week 7**

**Final presentation should be scheduled during the last 2 weeks**

**Knowledge taxonomy (Levels)**

**Remembering 30% list, describe, select from list,**

**Understanding 20% summarize, interpret, what**

**Applying 20% Construct**

**Analyzing 10% Explain, order**

**Evaluating 5% Rank, Assess**

**Creating 5% Create, Plan**