**SWEN 772: Software Quality Engineering (Spring 2017)**

**Course Syllabus**

**Course Description**

***[Standard Description from the catalogue]*** *This course begins with an exploration of the concepts underlying quality systems and the use of metrics. Students are encouraged to discuss the advantages as well as the limitations of systems and quantitative approaches, with a view to understanding the importance of interpretation in metrics usage and of matching quality systems choices to organizational objectives and culture. They learn the use of modern metrics such as DRE, PCE, COQ/COPQ, reliability objectives and SUMI scores through exercises in analyzing and interpreting charts. This is complemented with a project where they work in teams to design an appropriate quality system for a specific project/organizational situation, and discuss the application and analysis of its evaluation experimentation as a means of improving the quality aspects of subject project/organizational situation. (SWEN 722) Class 3, Credit 3 (Spring)*

***In addition*** *to the content specified in above course description, we will also learn some basics related to software testing and analysis, which are important quality assurance techniques. The last part of the course will feature some recent trends in quality engineering, such as crowdsourcing, data science for quality engineering, and quality engineering for (Ultra) large Internet systems (e.g., Facebook).*

**Course Time and Location**

Tuesday & Thursday, Golisano Hall (GOL)-1550

**Course Topics**

Please refer the **class schedule** for detailed list of course topics.

**Textbook(s)**

No textbook required.

Some content in the first 5 weeks will be adapted from: “Metrics and Models in Software Quality Engineering” by Stephen Kan (2nd Edition).

The instructor will add other course materials and readings (e.g., research papers).

**Student Presentation of Recent Paper**

The instructor will select a set of recent paper related to software quality engineering from leading SE conferences (ICSE, FSE, OOPSLA, ASE, ESEM, ISSTA, etc). Each student should register one paper for class presentation. The presentation must contain a few slides (~2) show your (constructive) critics towards the paper.

**Course Project**

There will be a final project for the course that develops a research project related to quality engineering (e.g., design a novel tool, develop a new metric model, etc.). The project will allow group work, but working in a group is optional (i.e., you may choose to work alone).

The students must submit a 1-page research proposal first (See class schedule for the due date). They are also required to schedule a f2f meeting with the instructor to discuss the project progress in week 9 or 10.

The final deliverables of the project should include: **final project paper, source code, data (if any)**. The final paper should be close to the quality of a publishable workshop paper, and has potential to be developed to a complete research paper.

All written papers must use the ACM SIG Proceedings Template. The instructor reserve the right to outright reject papers that do not conform to the template or fail to stay within the specified page limits for the assignments.

**Attendance Policy**

**Come to class.** Some sessions contain class team work that requires all students to be present to gain full benefit. You have one unexcused absence (slept in, car won't start, etc.) with no consequences. After that the following cumulative scale applies for additional unexcused absences.

Make up exams will only be granted for very good reasons (job interviews known in advance, documented sickness, family emergencies, etc.) Heavy workload in other (maybe to you more important) courses is typically not a very good reason.

**Grading**

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| --- | --- | --- |
| **Item** | **Percentage** | **Notes** |
| Midterm | 15% | Open Book, you have a week to finish it. |
| Final Exam | 20% | Open Book, you have a week to finish it. |
| Research Proposal + Presentation | 5% | See “Project” part for details. |
| Research Final Report + Presentation | 35% | See “Project” part for details |
| Paper Presentation | 15% | Students are required to present recent research papers appeared in leading conferences. |
| Class Participation | 10% | Attendance, Participating class discussion, etc. |
| >= 2 Unexcused Absences | -2% per | Check with instructor before the class. |

The following tables will be used to determine your letter grade at the conclusion of the course:

|  |  |
| --- | --- |
| **Grade** | **Range** |
| A | 93 or Above |
| A- | 90 or Above |
| B+ | 87 or Above |
| B | 83 or Above |
| B- | 80 or Above |
| C+ | 77 or Above |
| C | 73 or Above |
| C- | 70 or Above |
| D | 60 or Above |
| F | <60 |

When assigning final grades, the instructor reserves the right to alter these division points as he or she deems necessary based on the overall evaluation of individual or class performance and effort.