United States International University

Course Outline: 2022 SUMMER

APT 2080 INTRODUCTION TO SOFTWARE ENGINEERING

Lecturer: Wangai Mambo **Venue: LAB4** Time: 1:20- 3:00PM **Days:** TUE/THURS
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Course Description

Software Engineering covers technical and non-technical (management) methods, techniques, and practices used to develop software-dominated systems. The course will cover the software development process; a survey of techniques and practices used throughout the software development process to improve quality, increase productivity, and reduce risk; and quality assurance related to dependable systems.

Link to university mission outcomes & to program learning outcomes

CLO	Aligned to the *following university mission outcomes*:					
	Higher order thinking	Global understanding and	Community service	Literacy	Preparedness for career	Leadership and Ethics
1. Demonstrate understanding of the concepts of innovation, growth and value creation	✓	✓		✓	✓	
2. Describe the processes by which IT innovation is fostered, managed, and commercialized	✓	✓		✓	✓	✓
3. Spot new IT business opportunities in the environment, whether by recognition, development, or creation	✓	✓		✓	✓	
4. Effectively and efficiently evaluate the potential of new IT business opportunities	✓	✓		✓	✓	
5. Assess the market potential for a new venture, including customer need, competitors, and industry attractiveness	✓	✓		✓	✓	
6. Understand the key components of a successful business model and	✓	✓		✓	✓	

be able to pitch a venture to a potential funder or customer						

Link to Program Learning Outcomes

PLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
	Demonstrate the use of IS in a business organization.	Evaluate IT problems in a business organizations.	Apply communication & collaboration skills in IT projects.	Design IT solutions for business organizations.	Solve IT problems in business organizations	Manage IS within their area of specialization.
APT 2080 INTRODUCTION TO SOFTWARE ENGINEERING	A	A	A	A	A	A

Expected Learning Outcomes

By the end of this course, students will:

1. Understand software engineering concepts and principles
2. Be able to follow software engineering process in developing software
3. Understand skills software engineers need to develop
4. Be able to determine the time one takes in different engineering tasks and make improvements
5. Apply software engineering methods to develop software

Teaching Methodology

A series of lectures, group discussions. Audio-visual aids will be used in the lectures. Students will make frequent use of Case Studies in understanding the concepts and practices of software engineering, software development mini projects

Information literacy intensiveness

Students will be given software engineering assignments where they will be expected to formulate explicit search strategies and evaluate search results for quality and reliability. Two second half of semester assignments and

Final project will be based and assessed on writing and information literacy intensive criteria.

Instructional Material &/or Equipment

Textbooks, whiteboard, handouts, electronic projector, Internet access, and library.

Method of Evaluation

Class/Lab assignments, project work, Research & Case Presentations, written exams, will be used to evaluate the students;

Attendance		3%
Assignments and Exercise		17%
CATS		8%
Projects		22%
Mid-semester	20%	
Final semester exam	30%	
Total		**100%**

Content & Class Schedule

Week	Topics	Reading, exercises and CATS
1	Concepts and principles of software engineering Evolution of software engineering field Software engineering trends Individual Lesson exercise 1 during class submit by end of class	Read chapter 1
2	Requirement engineering and software process Lesson exercise 2 during class submit by end of class INDIVIDUAL Home exercise 1 -.	Read chapter 2
3	Software engineering methods: agile methods Lesson exercise 3 during class submit by end of class	Read chapter 3
4	System modeling Lesson exercise 4 during class submit by end of class	Read chapter 5
5	Developing a software system - case study Software engineering body of knowledge (SWEBOK) Software engineering ethics Lesson exercise 5 during class submit by end of class	
6	Social technical systems and systems engineering	Read chapter 11
7	**Mid Semester Exam**	**Revision**
8	Personal software process and software maturity model	
9	Quality management	Read chapter 24
10	Dependable software engineering	Read chapter 10

11	Individual project	Submit group project Work on individual project
12	Individual project Submit individual project draft	Work on individual project
13	Individual project Submit final complete individual project	Finish projects and submit
14	**Final Comprehensive Exam**	**Revision**

Core Reading Materials

Sommerville, I. (2016). Software Engineering 10th Edition, Pearson

Recommended Reference Materials

1. Pfleeger Lawrence Shari (2010), Software engineering theory and practice, Pearson.
2. Pressman, R. S. (2010) Software Engineering, A Practitioner's Approach, 6th Edition, McGraw-Hill.
3. USIU Library Software Engineering Books

Journals

1. IEEE Software
2. Software and Information Technology
3. Software Journal
4. IEEE Transactions on Software Engineering.
5. Springer Empirical Software Engineering.

Key Institutional Academic Policies

Students should note the following are key policies as outlined in the University Catalogue and Students Handbook

1. Academic dishonesty

a. Any intentional giving or use of external assistance during an examination without the express permission of the faculty member giving the examination.

b. **Fabrication: a**ny falsification or invention of data, citation or other authority in an academic exercise;

c. **Plagiarism: a**ny passing off of another's ideas, words, or work as one's own;

d. **Previously Submitted Work:** presenting work prepared for and submitted to another course;

2. Class Attendance

Students are expected to attend all classes. Upon being absent from **five** classes in a 3 unit course, the instructor will give a student an **"F"** grade for that course.