CS4385: TOPICS IN SOFTWARE ENGINEERING

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Topics in Software Engineering

Subject Code
CS - Computer Science
Course Number
4385

Academic Unit
Computer Science (CS)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
CS3342 Software Design or
CS3367 Essentials of Software Engineering, or equivalent

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course provides students with an opportunity to study selected advanced topics and identify emerging trends in software engineering. It exposes students to the state-of-the-art software engineering concepts, techniques, technologies, tools and/or processes through directed independent study, guided class discussions and practice of lifelong learning skills.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe critical issues and identify emerging trends in software engineering.		x		
2	Review selected current topics and evaluate new technologies and tools in software engineering.		x	x	
3	Apply advanced concepts, techniques, technologies, tools and/or processes in application software development.			x	

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Direct students to critical issues, current topics and selected articles for their independent study. Provide the basic background information and requisite knowledge on the selected topics.	1, 2, 3	3 hours/week
2	Tutorial	Work on short exercises or guided questions, or practice the necessary skills with software tools.	2, 3	8 hours/semester

3	Presentations and group discussions.	Guide students on their presentations in class. Facilitate group discussions, critical review and evaluation of new technologies and tools.	2, 3	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Guided study	1, 2	25	
2	Project	2, 3	25	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Rubrics (AR)

Assessment Task

Guided study

Criterion

1.1 ABILITY to DESCRIBE critical issues and IDENTIFY emerging trends in software engineering
1.2 ABILITY to REVIEW selected current topics and EVALUATE new technologies and tools in software engineering

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Project

Criterion
2.1 ABILITY to REVIEW selected current topics and EVALUATE new technologies and tools in software engineering
2.2 ABILITY to APPLY advanced concepts, techniques, technologies, tools and/or processes in application software development

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Examination

Criterion
3.1 ABILITY to ACHIEVE the respective CILOs

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus
A selection of topics on contemporary issues and trends of software engineering, such as the following: Software development processes, tools and patterns. Software requirements analysis and specification. Emerging software design and construction technologies. Code generation, analysis and verification. Advanced software testing and debugging techniques. Software management and maintenance issues.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	P. Bourque and R.E. Fairley (Eds.) (2014). Guide to the Software Engineering Body of Knowledge (Version 3). IEEE Computer Society. http://www.swebok.org/
2	Selected peer-reviewed software engineering articles from professional magazines, academic journals, book chapters and conference proceedings: available via CityU library or the Internet.
3	IEEE standards documents: updated versions accessible online via CityU library.