CS3367: ESSENTIALS OF SOFTWARE ENGINEERING

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Essentials of Software Engineering

Subject Code
CS - Computer Science

Course Number
3367

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
P5, P6 - Postgraduate Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
CS2311 Computer Programming or
CS2360 Java Programming, or equivalent

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil
Part II Course Details

Abstract
This course introduces students to the concepts, methodologies and practices in the application software development life cycle. Students will get exposed to the process, methodologies and techniques for building and maintaining software application systems.

Course Intended Learning Outcomes (CILOs)

<table>
<thead>
<tr>
<th>CILOs</th>
<th>Weighting (if app.)</th>
<th>DEC-A1</th>
<th>DEC-A2</th>
<th>DEC-A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Recognize and describe the stages and processes involved in a software development life cycle.</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Explain and compare the major software development methodologies and techniques.</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Apply the appropriate methodology, techniques and best practices to develop software applications.</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>TLAs</th>
<th>Brief Description</th>
<th>CILO No.</th>
<th>Hours/week (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>1, 2, 3</td>
<td>3 hours/week</td>
</tr>
<tr>
<td>2</td>
<td>Tutorial</td>
<td>1, 2, 3</td>
<td>8 hours/semester</td>
</tr>
</tbody>
</table>
Software design project

Require students to work in a group on a software design project, demonstrate the ability to handle project management issues, and document the software engineering tasks performed throughout the software development process. May require students to present their project and share their learning experience.

<table>
<thead>
<tr>
<th>ATs</th>
<th>CILO No.</th>
<th>Weighting (%)</th>
<th>Remarks (e.g. Parameter for GenAI use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software design project</td>
<td>1, 3</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Quiz</td>
<td>1, 2, 3</td>
<td>15</td>
<td></td>
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</tbody>
</table>

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
Software design project

Criterion
1.1 ABILITY to JUSTIFY the stages and processes adopted in the project
1.2 ABILITY to APPLY the appropriate methodology, techniques and best practices in the project

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
Quiz

Criterion
2.1 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

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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

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Part III Other Information

Keyword Syllabus

- Overview of software issues and problems. Introduction to software engineering and process models.
Software design principles, patterns, tools and methodologies. Object-oriented design approach. Introduction to UML. Software implementation issues. Software testing, validation and verification.

Software engineering best practices. Managerial and social aspects of software development.

Reading List

Compulsory Readings

<table>
<thead>
<tr>
<th>Title</th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>Nil</td>
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</table>

Additional Readings

<table>
<thead>
<tr>
<th>Title</th>
<th></th>
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<tbody>
<tr>
<td>3</td>
<td>Selected documents from IEEE Standards: accessible online via CityU library.</td>
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