Module Outline

ITS 1027 – Software Engineering

Version 1.0

Contents

1.0 Change History

Any changes/revisions that have been made to the syllabus are documented herewith, mentioning the latest version details in this document.

Version	Date	Revisions/Changes made
Version 1.0	April 2021	Released

2.0 Introduction to Module

This course is designed to provide a full overview of Software Engineering. This module will cover fundamental knowledge of software engineering and all the necessary concepts and knowledge areas related software initialization to deployment process.

3.0 Aim

- To make the awareness about what is software engineering and why it is important.
- To make students thorough with SDLC and applying those concepts into software engineering process.
- To design and implement the different type of diagrams involved in software engineering process.
- To come up with user friendly user interface design implementation which are according to the UI/UX Principles.

4.0 Outcomes of the Module

The student will be able to;

- Describe what is software engineering and why it is important
- Describe all stages involved in SDLC
- Perform requirement gathering and analysis process of any kind of software requirement
- Explain different types of process models and their pros and cons
- Design the different types of software diagrams involved in the development process
- Perform UI/UX implementation of a software project by identifying the audience
- Work with CASE tools

5.0 Expected Prior Knowledge

- Basic Programming Fundamental Knowledge

6.0 Syllabus Details

1.0 Introduction to Software Engineering and Software Engineering Roles	1.1 Introduction to software Engineering 1.2 Software Engineering diversity ● Stand-alone applications ● Interactive transaction-based applications ● Embedded control systems ● Batch processing systems ● Entertainment systems etc. 1.3 Software Engineering Roles 1.4 The Software Engineering ethics 1.5 Frequently asked SE questions discussion
2.0 SDLC - Software Development Life Cycle	2.1 Introduction to SDLC ● Planning ● Define Requirements ● Design and Prototyping ● Software Development ● Testing ● Deployment ● Operations and Maintenance 2.2 Importance of SDLC
3.0 Software Development Methodologies	3.1 Process Models ● Waterfall method ● V Model ● Incremental Model ● Spiral Model ● Prototype Model ● Iterative Model 3.2 Advantages and disadvantages of each process models

4.0 Requirements Analysis and Specification	4.1 Software requirements document 4.2 Requirements specification 4.3 Requirements engineering process 4.4 Requirements elicitation and analysis 4.5 Requirements validation
5.0 Functional and Non-Functional Requirements	5.1 Functional Requirements ● Functional requirement identification and explain with examples 5.2 Non- Functional Requirements ● Non- Functional requirement identification and explain with examples
6.0 Introduction to Software Designing	6.1 Use case Diagram 6.2 Activity Diagram 6.3 Dataflow Diagram 6.4 Sequence Diagram 6.5 Class Diagram
7.0 UI Designing	7.1 Wireframes and Mockups with tools such as AdobeXD or Figma 7.2 Introduction to Prototype Designing
8.0 Introduction to UX Engineering	8.1 Introduction to UX Engineering 8.2 UX Principles
9.0 Software Development with CASE tools	9.1 Introduction to CASE tools 9.2 Scope of CASE tools 9.3 CASE tool types. • Diagram tools • Process Modeling tools • Project Management tools • Design tools • Configuration Management tools • Change Control tools • Prototype tools • Web Development tools • Maintenance tools

7.0 Evaluation Process

This module contains In-class quizzes, one practical and a Final exam (written). The Assignment plan is as follows.

In-Class Quiz 1	Software Engineering Fundamentals	30 minutes
In-Class Quiz 2	Software Diagram Designing - User Case Diagram	30 minutes
In-Class Quiz 3	Software Diagram Designing - Activity Diagram	30 minutes
In-Class Quiz 4	Software Diagram Designing – Dataflow Diagram	30 minutes
In-Class Quiz 5	Software Diagram Designing – Sequence Diagram	30 minutes
Practical Exam from UI/UX		4 hours

Final Written Examination	3 hours

In-class quizzes are conducted within the class room without any prior notice. Time mentioned for in class quizzes including practical examination is added to the lecture time slot.

Final Examination will be conduct separately after the module is completed. 3 hours for final examination is not included in the lecture time slots.

8.0 Module Grading Criteria

The final grade for the Software Engineering module is calculated as follows.

- 20% - In-class Quizzes
- 30% - Practical Exam from UI/UX
- 50% - Final Examination

Attendance is compulsory for the student to be eligible for the Final Examination. The Institute may consider medical documents on lieu of absences where applicable.

9.0 Module Reference Materials

- Software Engineering – 9th Edition – Ian Sommerville
- Software Engineering: A Practitioner's Approach- 6th Edition, International Edition – Roger S. Pressman

10.0 Contact Us

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