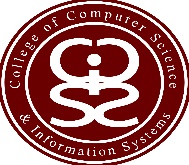


**Institute of Business Management**

**College of Computer Science & Information System**

**Course Outline**



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| --- | --- | --- | --- |
| **Course Code** | CSC317 | **Faculty** | Prof. Tariq R. Soomro |
| **Course Title** | Introduction to Software Engineering | **Room # & Phone/Ext.** | Ext.207 |
| **Credit Hours** | 3+0 | **Consultation Hours** | Thursday  12:45 – 15:45 |
| **Pre-Requisite** | - | **E-Mail** | [tariq.soomro@iobm.edu.pk](mailto:tariq.soomro@iobm.edu.pk) |
| **Program** | BS (Computer Science) / BS (Software Engineering) | **Semester** | Fall 2021-22 |

**Course Description:**

This course is one of the most important courses in a Computer Science program. It gives student primer knowledge about software engineering processes to help them in building professional software. This course will deal with the requirement engineering, analysis and design of the software system with the complete documentation of every phase.

**Course Learning Outcomes:**

On completion, of course student should be able to:

1. Understands Software Engineering terminologies
2. Distinguish and explain Software Process Models
3. Analyze requirements of the software project
4. Examine and classify software designing

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| **Text Book:** |
| 1. Pressman Roger and Maxim Bruce, Software Engineering: A Practitioner’s Approach, 9th Edition, McGraw Hill, 2019, ISBN-10: 1259872971, ISBN-13: 978-1259872976 |
| **Reference Books:** |
| 1. Sommerville Ian, Software Engineering, 10th Edition, Addison-Wesley, ISBN-10: 0133943038, ISBN-13: 978-0133943030 |

**Course Plan:**

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| --- | --- | --- |
| **Week** | **Session Topics** | **Remarks** |
| 1 | **Course Overview, Introduction to Software Engineering**  What is Software?; Software Applications; Legacy Software; Characteristics of WebApps; Software Engineering; A Layered Technology; A Process Framework/ Activities; Adapting a Process Model | Chapter 1 |
| 2 | **The Software Process and its model**  Social Learning Process; What / who / why is Process Models?;  Definition of Software Process (SP); A Generic Process Model; Process Flow; Process Patterns & types; Prescriptive Models; Other Process Models | Chapter 2 (Reference Book) |
| 3 | **Agile Development**  The Manifesto for Agile Software Development; What is “Agility”?; An Agile Process; Agility Principles; Extreme Programming (XP); Adaptive Software Development; Dynamic Systems Development Method; Scrum; Crystal; Feature Driven Development/Agile Modeling | Chapter 3 |
| 4 | **Principles that Guides Practice & Understanding Requirement**  Software Engineering Knowledge; Principles that Guide; Process; Principles that Guide Practice; Communication Principles; Planning Principles; Modeling Principles; Requirements Modeling Principles; Design Modeling Principles; Agile Modeling Principles; Construction Principles /Preparation Principles/ Coding Principles/Validation Principles /Testing Principles/ Deployment Principles; Requirements Engineering; Use-Cases/ examples; Negotiating Requirements;  Validating Requirements | Chapter 4 & 5 |
| 5 | **Requirement Modeling: Scenarios, Information, and Analysis Classes**  Requirements Analysis; Rules of Thumb; Domain Analysis; Elements of Requirements Analysis; Scenario-Based Modeling (Use-Cases/Data Modeling); Class-Based Modeling | Chapter 6 & Use Case Tutorial |
| 6 | **Requirement Modeling: Flow, Behavior, Patterns, and WebApps**  Requirements Modeling Strategies; Flow-Oriented Modeling; DFD with examples; Control Flow Modeling; | Chapter 7 & DFD Tutorial |
| 7 | **Design Concepts**  Design / Analysis Model 🡪 Design Model; Design and Quality; Quality Guidelines; Design Principles; Fundamental Concepts (from abstraction to design class) | Chapter 8 |
| 8 | **Mid Term Exam** |  |
| 9 | **Mid Term Exam** |  |
| 10 | **Architectural Design**  Why Architecture?; Why is Architecture Important?; Architectural Descriptions; Architectural Genres; Architectural Styles; Architectural Patterns; Architectural Design; Architectural Complexity; Architectural description language; An Architectural Design Method | Chapter 9 |
| 11 | **Component-Level Design**  What is a Component?; OO Component / Conventional Component; Design Guidelines / Cohesion / Coupling; Component Design for WebApps; Algorithm Design; Stepwise Refinement; Why Design Language?; Component-Based Development; Component-Based SE and its activities; OMG/ CORBA / Microsoft COM / Sun JavaBeans | Chapter 10 |
| 12 | **User Interface Design**  Interface Design; Golden Rules; User Interface Design Models;  Interface Analysis / User Analysis / Task Analysis and Modeling; Interface Design Steps; Design Issues; WebApp; Interface Design; Interface Design Principles; Interface Design Workflow; Aesthetic Design | Chapter 11 |
| 13 | **Pattern-Based Design**  Design Patterns; Basic Concepts; Effective Patterns; Generative Patterns; Kinds of Patterns; Frameworks; Pattern Languages;  Pattern-Based Design; Thinking in Patterns; Common Design Mistakes; Architectural Patterns; Patterns Repositories; Component-Level Patterns; User Interface (UI) Patterns; WebApp Patterns | Chapter 12 |
| 14 | **WebApp Design**  Design & WebApps; Design & WebApp Quality; Quality Dimensions for End-Users; WebApp Design Goals; WebApp Interface Design; Aesthetic Design / Content Design; Architecture Design; Navigation Design; Component-Level Design | Chapter 13 |
| 15 | **Dead Week** |  |
| 16 | **Final Examination** |  |

**Assessment Tools & Marks Distribution:**

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| --- | --- | --- | --- |
| **Assessment Instruments** | **Percentage** | **CLO Covered** | **PLO Covered** |
| Mid Term | 20% | 1,2, 3 | 1,2,3,10 |
| Project Assessments | 30% | 1, 2, 3, 4 | 1,2,3,4,6,7,8,9, 10 |
| Assignments | 10% | 1, 2 | 1,2,7,9,10 |
| Final Examination | 40% | 1, 2, 3, 4 | 1,2,3,4,10 |