
Course Outline

for

Software Engineering

Version 1.0

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Organization: NTI

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1. Introduction

1.1 Abstract

*The primary objective of this document is to specify the course outline for the **Software Engineering** course.*

1.2 About the Instructor

Fawad Ishaq Ch is currently working as a Business Analyst at Innovative (PVT) Ltd. one of the leading card processors in the world. He obtained his MCS degree from the Hamdard University, Karachi. His teaching experience includes 7 years as lecturer computer science and information technology at various leading universities in the country. He also has an industry experience of 3 years as system analyst, one of which was spend as Manager IT.

1.3 Introduction

Software engineering is the branch of computer science that creates practical, cost-effective solutions to computing and information processing problems, preferentially by applying scientific knowledge, developing software systems in the service of mankind. This course covers the fundamentals of software engineering, including understanding system requirements, finding appropriate engineering compromises, effective methods of design, coding, and testing, team software development, and the application of engineering tools. The course will combine a strong technical focus with a capstone project providing the opportunity to practice engineering knowledge, skills, and practices in a realistic development setting with a real client.

1.4 Learning Objectives

- *An understanding of different software processes and how to choose between them*
- *How to elicit requirements from a client and specify them*
- *Design in the large, including principled choice of a software architecture, the use of modules and interfaces to enable separate development, and design patterns.*
- *Understanding good coding practices, including documentation, contracts, regression tests and daily builds.*

- Various quality assurance techniques, including unit testing, functional testing, and automated analysis tools.
- Working with version control, configuration management, unit/regression testing, issue tracking, and debugging tools
- Creating a project plan
- Creating and analyzing design models
- Making engineering tradeoffs
- Working in a team
- Putting software process into practice
- Communicating with clients

1.5 Web References

- <http://fawadishaq.wordpress.com>

2. Course Plan

2.1 Course Contents

Part-I

- Introduction to Software Engineering
- Software Process Models
- Software Project Planning
- Project Scheduling and Tracking
- Software Quality Assurance
- Requirements Engineering
- Object Oriented Software Engineering

Part-II

- Introduction to UML
- Use Cases and Actors
- Object Interaction
- Classes and Packages
- Attributes and Operations

- *Relationships*

2.2 Teaching Methodology

- *Classroom-based teaching*
- *Classroom-based training*
- *Group activities & discussions*
- *Q & A sessions*

2.3 Recommended Text

- *Software Engineering - A practitioner's approach, By Roger S. Pressman, 5th Ed.*
- *Mastering UML with Rational Rose 2002, By Wendy Boggs & Michael Boggs.*

2.4 Course Material

- *Instructor handouts*
- *Lab exercises*
- *Internet exercises*
- *Web references*

2.5 Evaluation Criteria

Evaluation is strictly based on how well the student will perform in class activities, Lab activities, and other activities. Performance will be monitored throughout the semester. Following are the tools used to measure the competency level of the candidate:

- *Class quizzes (MCQ type). Normally conducted at the end of each unit.*
- *Lab exercises*
- *Home Assignments*
- *Projects*

2.6 Modeling Tools

- *Rational Rose 2002*
- *Microsoft Visio 2003*