

Course outlines
University of South Asia
Department of CSE
Software Engineering

Course Code: MCS651

Course Title: Software Engineering & Project Management

Course Teacher: Md. Ashraful Islam, Associate Professor, Dept. of CSE

[Cell #0088-01712-516838](tel:0088-01712-516838) [Email:ashraful47@yahoo.com](mailto:ashraful47@yahoo.com), ashraful.islam@manarat.ac.bd

Time and location: Friday (2.0-4.0)

Materials: **Textbook:**

Software Engineering. (any suitable Edition) By Ian Sommerville.

Reference Book and Materials: Software Engineering A practical Approaches by Roser S. Pressman.

Software Engineers apply the principles and techniques of computer science, **engineering**, and mathematical analysis to the design, development, testing, and evaluation of the **software** and the systems that enable computers to perform their many applications.

Objectives of this course: After completing this course the student will be capable in the following areas:

- * Ability to apply knowledge of mathematics, science, and engineering and an ability to design and conduct experiments, as well as to analyze and interpret data.
- * An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- * An ability to function on multi-disciplinary teams, ability to identify, formulates, and solves engineering problems and understanding of professional and ethical responsibility.
- * An ability to communicate effectively and the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- * Recognition of the need for, and an ability to engage in, life-long learning, knowledge of contemporary issues, an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice , the ability to analyze, design, verify, validate, implement, apply, and maintain software systems and the ability to appropriately apply discrete mathematics, probability and statistics, and relevant topics in computer science and supporting disciplines to complex software systems.

No. Session	Descriptions
Session # 01	Introduction to Software Engineering: Software, Types of Software, Attributes of good software, Software Engineering. Difference between software engineering and computer science.
Session #02	Difference between software engineering and system engineering. Costs of software engineering, Key challenges facing software engineering. Professional Ethics and IEEE/ACM Ethical code of Software engineer. Software Processes and Process Model: Process and software process model, points of process activities.
Session #03	Different types of process model, Generic software process models phases of Waterfall model, problems of Waterfall model. Incremental development Model, Advantages of incremental development, process iteration.
Session #04	Requirements: Requirements, Functional and non-functional requirements, User requirements, System requirements, Interface specification, The software requirements document, Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.
Session #05	CT# 01 and Revision
Midterm Exam.	
Session #07	Project Management: Management activities, Project planning, Project scheduling, Risk management.
Session #08	Software costs: Software productivity, Estimation techniques, Algorithmic cost modelling and Project duration and staffing.
Session #09	Managing people and Software cost estimation: Selecting staff, Motivating people, Managing groups, The people capability maturity model. Software cost estimation: Software cost, Software productivity, Estimation techniques, Algorithmic cost modelling, Project duration and staffing
Session #10	Software testing and CT#02: Software Evaluation: Verification and Validation Program evolution dynamics, Software maintenance, Evolution processes, Legacy system evolution, Verification and validation planning, Software inspections, Clean room software development. System testing, Component testing, Test case design, Test automation, Reliability validation, Safety assurance, Security assessment, Safety and dependability cases.
Session #11	Configuration management: Configure, Configuration management planning, Change management, Version and release management, System building, CASE tools for configuration management. and VIVA
Final Exam.	

Mark Distribution

Attendance	CT and Assignment	Presentation/VIVA	Midterm	Final	Total
10	10	10	30	40	100