Course Objective and Outcome Form
Department of Electrical and Computer Engineering
School of Engineering and Physical Sciences
North South University, Bashundhara, Dhaka-1229, Bangladesh

1. **Course Number and Title: CSE 327 Software Engineering**
2. **Number of Credits: 03**
3. **Type: Core**
4. **Prerequisites: CSE225**
5. **Contact Hours: Lectures – 3 Hours/week**
6. **Course Summary:**

   Follows the software life cycle - from requirement, specification, and design phases through the construction of actual software. Topics include management of programming teams, programming methodologies, debugging aids, documentation, evaluation and measurement of software, verification and testing techniques, and the problems of maintenance, modification, and portability.

7. **Course Objectives:**

   The objectives of this course are

   a. Give the students an appreciation of the complexity involved in the inception, design, implementation and delivery of modern software systems.
   b. Students should appreciate what makes quality software and how software engineering topics/methods can be effective to deliver such quality products.
   c. The course will present theoretical material and create opportunities for students to apply what they learn in class and from other sources.

8. Course Outcomes (COs):

Upon Successful completion of this course, students will be able to:

Sl.	CO Description	Weightage (%)
1	**identify** the requirements of a software system, including technical-functional requirements, non-technical requirements, and wider societal impact.	10
2	**design** an object oriented software architecture and **express** the architecture using UML or other standard tools under a set of requirements and/or constraints,.	30
3	**choose** an appropriate design pattern for a particular scenario to solve the problem.	20
4	**implement** a software system with multiple, possibly heterogeneous, components for a given set of requirements..	20
5	**devise** test cases to test functions and/or functionality of software system against a set of requirements.	20

9. Mapping of CO-PO:

Sl.	CO Description	POs	Bloom's taxonomy domain/level	Delivery methods and activities	Assessment tools
CO 1	**Identify** the requirements of a software system, including technical-functional requirements, non-technical requirements, and wider societal impact.	**b**	Cognitive/ Apply	Lectures	Quiz, Project (SRS)
CO 2	**Design** an object oriented software architecture and **express** the architecture using UML or other standard tools under a set of requirements and/or constraints,.	**c**	Cognitive/ Create	Lectures	Quiz
CO 3	**Choose** an appropriate design pattern for a particular scenario to solve the problem.	**n**	Cognitive/ Understand	Lectures	Quiz
CO 4	**Implement** a software system with multiple, possibly heterogeneous,	**f**	Cognitive/ Create	Lectures	Project ,Demonstration

	components for a given set of requirements..				
CO 5	**Devise** test cases to test functions and/or functionality of software system against a set of requirements.	**a**	Cognitive/ Apply	Lectures	Quiz/Exam

10. Resources

Text books:

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Ian Sommerville	2010	Software Engineering	9th	Pearson	ISBN-13: 978-0137035151
2	Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides	1994	Design Patterns: Elements of Reusable Object-Oriented Software	1st	Addison-Wesley Professional	ISBN-13: 978-0201633610

Reference books:

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Stephen R Schach	2010	Object-Oriented and Classical Software Engineering	8th	McGraw-Hill Education	ISBN-13: 978-0073376189

Online resources:

- https://airbrake.io/blog/design-patterns/
- https://www.atlassian.com/git/tutorials
- https://git-scm.com/docs/gittutorial
- https://laravel.com/
- https://www.djangoproject.com/
- http://hibernate.org/
- https://spring.io/
- https://msdn.microsoft.com/en-us/library/aa480021.aspx

11. Weightage Distribution among Assessment Tools

Assessment Tools	Weightage (%)
Quizzes	15
Midterm	25
Final Exam	30
Project	30
	100

12. Grading policy: As per NSU grading policy available in http://www.northsouth.edu/academic/grading-policy.html

13. Course Policies:

a. Students are expected to abide by the NSU code of conduct
b. Students are expected to join (and regularly follow) the posts made in the appropriate Google Classroom/Facebook/Other online groups
c. No makeup quizzes and exams will be taken
d. No extension will be given for any assessment item
e. Mobile phones are strictly prohibited. Students will be penalised for violating this policy.

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Project Assessment

SL#	Item	Marks	Notes
1	Submission and completeness of SRS	2.5	Due start of Lecture 6. This is a **Hurdle**
	Business case and Relevance to Gartner's predictions	2.5	
2	Submission and completeness of SDS	5	Due end of Lecture 10. This is a **Hurdle**
3	Use of GIT (for documents and source code)	10	Please contact me to create your Bitbucket repositories. You should create Bitbucket accounts, if you do not have one
4	Utilisation of a popular framework	10	Your choice must be cleared from me.
5	Use of Artificial Intelligence	10	Try to leverage existing AI solutions, no need to train your own AI
6	Use of a Federated Identity provider	10	Preferably Google and/or Facebook
7	Source code comments (coverage and quality)	10	I will check on GIT whether this was done regularly or right at the end. Zero (0) marks for comments written right at the end.
8	Unit tests (coverage and quality)	10	I will check on GIT whether this was done regularly or right at the end. Zero (0) marks for tests written right at the end.
9	UI Design (ease and beauty)	10	Make sure you get your UI design checked by the instructor before proceeding.
10	Support for multiple target platforms	10	
11	Project Management	10	
	Total	**100**	**Work hard and good luck!**

You will be notified if I decide to change any of the above.

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Department of Electrical and Computer Engineering
CSE 327 - Software Engineering
Lecture Plan (Tentative)

SL#	Topic	Material
1	Course Introduction	This document
2	What is Software Engineering? Why Software Engineering?	Sommerville - Chapter 1
3	Software Phases	Sommerville - Chapter 2
4	Software Phases	Sommerville - Chapter 2
5	SDLC Models - Waterfall	Sommerville - Chapter 2
6	SDLC Models - Iterative and Incremental	Sommerville - Chapter 2
7	SDLC Models - Agile	Sommerville - Chapter 3
8	Use Case Diagrams	Sommerville - Chapter 4 https://www.ibm.com/docs/en/rational-soft-arch/9.6.1?topic=diagrams-use-case
9	Expanded Use Cases	Sommerville - Chapter 4 https://www.ibm.com/docs/en/rational-soft-arch/9.6.1?topic=diagrams-use-case
10	First Quiz	
11	UML Class Diagram	Sommerville - Chapter 5,7 https://www.ibm.com/docs/en/rational-soft-arch/9.7.0?topic=diagrams-creating-class
12	Design Principles	
13	Design Principles	
14	Design Practice	
15	Quiz 2	
16	Midterm	

15	Design Patterns - Introduction	Gang of Four book
16	Design patterns - Singleton, Adapter	Gang of Four book
17	Design Patterns - Observer, Factory Method	Gang of Four book
18	Design Patterns - Abstract Factory, Composite	Gang of Four book
19	Design Patterns - Decorator, Strategy, Template	Gang of Four book
	Design Patterns Practice	Gang of Four book
20	Quiz 3	
21	Testing	Sommerville - Chapter 8
22	Testing Practice	
23	Quiz 4	
24	Project Marking	