AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

Faculty of Science and Technology (FST)
Department of Computer Science (CS)
Undergraduate Program

COURSE PLAN — SEMESTER: FALL 2025-2026

I. Course Core and Title

CSC 3114: Software Engineering

II. Credit

3 credit hours (2 hours of theory and 2 hours 20 mins Lab per week)

III. Nature

Core Course for CSE

IV. Prerequisite

CSC 2210: Object Oriented Analysis and Design

V. Vision:
Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that is in line with the national and global context.

VI. Mission:
The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process.

VII - Course Description:

- Comprehend introduction to the modern study of software engineering.
- Discuss the present software engineering practices.
- Discuss various process models used in software engineering
- Describe requirements for engineering and design process.
- Comprehend the technologies used in coding and testing.
- Discuss software project management and planning

VIII – Course outcomes (CO) Matrix:

By the end of this course, students should be able to:

COs *	Description	Domain Level ***			PO Assessed ****
		C	P	A	
CO1	*Explain* the impact of software engineering over various contexts of software development to assess societal, health, safety, legal and cultural issues			3	PO-f-1
CO2	*Explain* various software engineering principles in solving problems over various contexts of software development environment			3	PO-f-1
CO3 **	***Select* appropriate software engineering models, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment**	5			PO-f-2
CO4 **	***Apply engineering management principles and economic decision making to develop software engineering project management plan.***		4		PO-k-1

C: Cognitive; P: Psychomotor; A: Affective Domain

* *CO assessment method and rubric of COs assessment is provided in later section*
** *COs will be mapped with the Program Outcomes (POs) for PO attainment*
*** *The numbers under the 'Level of Domain' columns represent the level of Bloom's Taxonomy each*

CO corresponds to.
**** *The numbers under 'PO Assessed' column represent the POs each CO corresponds to.*

IX – Topics to be covered in the class: *

Time Frame	CO Mapped	Topics	Teaching Activities	Assessment Strategy(s)
Week 1	CO1	Software Engineering & Software Development Process Model	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 2	CO1, CO2	Requirements Engineering, Introduction to GitHub	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 3	CO1, CO2 CO3	Agile Methodologies of Software Development, Extreme Programming	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 4	CO1, CO2 CO3	SCRUM, Introduction to TRELLO	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 5	CO1, CO2 CO3	DSDM and FDD in Software Development	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Midterm (Week 6)				
Week 7	CO3, CO4	Software Project Estimation	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 8	CO3, CO4	Project Scheduling	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 9	CO2, CO3, CO4	Risk Management, Software Configuration Management [SCM]	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 10	CO2, CO4	Software Design, Introduction to Software Testing	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 11	CO3, CO4	Introduction to Software Testing, Software Quality Attributes	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Week 12	CO3, CO4	Software Quality Attributes (Cont.), Product Metrics	Lecture, Question-answer, Lab Practice	Quiz, Term Exam, Project
Final term (Week 13)				

* *The faculty reserves the right to change, amend, add, or delete any of the contents.*

X – Mapping of PO/PLO and K, P, A of this course:

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	K	P	A
PO-f-1	Accepts and recognizes the role of engineering in society, health, safety, legal and culture.	Affective Level 3 (Valuing)			
PO-f-2	Design solution for complex engineering problem in accordance with professional practices	Cognitive Level 5 (Evaluating)	K7	P1 P3 P7	
PO-k-1	Apply engineering management principles and economic decision making to solve engineering projects as a team	Psychomotor Level 4 (Articulation)			

XI – K, P, A Definitions

Indicator	Title	Description
K7	Comprehension of engineering in society	Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability
P1	Depth of knowledge required	Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach
P3	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
P7	Interdependence	Are high level problems including many component parts or sub-problems

XII – Mapping of CO Assessment Method and Rubric

The mapping between Course Outcome(s) (COs) and The Selected Assessment method(s) and the mapping between Assessment method(s) and Evaluation Rubric(s) is shown below:

COs	Description	Mapped POs	Assessment Method	Assessment Rubric
CO1	*Explain* the impact of software engineering over various contexts of software development to assess societal, health, safety, legal and cultural issues	PO-f-1	Project	Rubric for Project
CO2	*Explain* various software engineering principles in solving problems over various contexts of software development environment	PO-f-1	Project	Rubric Quiz/Exam
CO3	*Select* appropriate software engineering models, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment	PO-f-2	Project	Rubric for Project
CO4	*Apply engineering management principles and economic decision making to develop software engineering project management plan.*	PO-k-1	Project	Rubric for Project/Quiz/ Term Exam

XIII – Evaluation and Assessment Criteria

CO1: *Explain* the impact of software engineering over various context of software development to assess societal, health, safety, legal and cultural issues

Assessment Criteria	Not Attended/ Incorrect (0)	Inadequate (1-2)	Average (3)	Good (4)	Excellent (5)
Evaluation Criteria	**Evaluation Definition**				
Problem Analysis	Background information of the problem area. Clearly state what is the real problem in the context of societal, health, safety, legal and cultural issues and why this problem is important to consider?				
Socio-cultural Impact	Provided an analysis of the impact of the software product in societal, health, safety, legal and cultural issues in the project				
Related Solutions and Studies	Demonstrate the novelty of the project idea, discuss the existing software product/research within the problem area (other's work). Who else has studied this problem? And what were their findings? How do these studies relate to the problem domain? What is the gap still exist to consider?				

CO2: *Explain* various software engineering principles in solving problems over various context of software development environment					
Assessment Criteria	**Not Attended/ Incorrect (0)**	**Inadequate (1-2)**	**Average (3)**	**Good (4)**	**Excellent (5)**
Evaluation Criteria	**Evaluation Definition**				
Content knowledge	Demonstrates full knowledge of the software engineering practice and principles				
Selection and Argumentation	Articulates a position or argument for the choosing the correct practice and principles of software engineering				

CO3: *Select* appropriate software engineering models, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment					
Assessment Criteria	**Not Attended/ Incorrect (0)**	**Inadequate (1-2)**	**Average (3)**	**Good (4)**	**Excellent (5)**
Evaluation Criteria	**Evaluation Definition**				
Selection of Software Engineering Models	Clearly articulates a position or argument for the choosing software engineering models. Presents sufficient evidence to support argument for the model selection				
Role identification and Responsibility Allocation	Pan project with proper role identification and responsibility allocation in the software engineering project management activities				
Formatting and Submission	Project report should be submitted within deadline following the appropriate structure, style, font, alignment, grammar, spelling, etc.				

CO4: *Apply engineering management principles and economic decision making to develop software engineering project management plan.*					
Assessment Criteria	**Not Attended/ Incorrect (0)**	**Inadequate (1-2)**	**Average (3)**	**Good (4)**	**Excellent (5)**
Evaluation Criteria	**Evaluation Definition**				
Test Planning	Prepare test plan and test cases for testing the selected elements of the proposed software products				
Effort Estimation and Scheduling	Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources				
Risk Management	Identify all the potential risks in your project and prioritize them and provide a mitigation plan to overcome these risk factor.				

XIV- Course Requirements

- Students are expected to attend at least 80% of the class.
- Students are expected to participate actively in the class.
- For both terms, there will be 2 quizzes based on the theoretical knowledge and conceptual understanding of the topic covered discussed in the classes.
- Among the 2 quizzes only 1 quiz (best one) will be considered for the calculation of grades. So, one quiz is mandatory for all. Makeup for quizzes might be arranged only if a student misses both quizzes and has proper medical documents.
- Submit the report and link based on the given course related problems.
- Submission of projects should be on time.
- Incomplete grades (I) may be assigned at the end of the semester to students who have not finished their course requirements (attendance, quizzes, exams, project etc.) with passing academic standing. Students must complete the pending requirements for the course within a month of the semester end. Failure to do so may result in an F grade being awarded to the student for that course.

XV – Evaluation & Grading System*

The following grading system will be strictly followed in this class

Mid-Term Exam:
Attendance & Performance: 5%
Quizzes: 20% (Best 1 out of 2)
Lab Evaluation: 15%
Term Exam: 60%

Final Term Exam:
Attendance & Performance: 5%
Quizzes: 15% (Best 1 out of 2)
Project Report & Viva: 20%
Term Exam: 60%

Semester grade: 40% midterm + 60% final term

Letter	Grade Point	Numerical %
A+	4.00	90-100
A	3.75	85 - < 90
B+	3.50	80 - < 85
B	3.25	75 - < 80
C+	3.00	70 - < 75
C	2.75	65 - < 70
D+	2.50	60 - < 65
D	2.25	50 - < 60
F	0.00	< 50
I		Incomplete
W		Withdrawal
UW		Unofficially Withdrawal

** The evaluation system will be strictly followed as par the AIUB grading policy.*

XVI – Textbook/ References

- Software Engineering: A Practitioner's Approach, Seventh Edition, Roger S. Pressman
- Software Engineering; Sommereville
- An Integrated Approach to Software Engineering, Pankaj Jalote
- Object Oriented Software Engineering, Ivar Jacobson, Magnus Christerson, Patrik Jonsson, Gunnar Overgaard
- Systems Analysis and Design: An Object-Oriented Approach with UML, 5th Edition, Alan Dennis
- The Art of Computer Programming, The, Volumes 1-3 Boxed Set (2nd Edition), Donald E. Knuth
- Component Software: Beyond Object-Oriented Programming, Clemens Szyperski

XVII - List of Faculties Teaching the Course

FACULTY NAME	SIGNATURE
JUBAYER AHAMED	
MD. RAIHAN MAHMUD	
MD. ABDULLAH ALL MAHMUD	
ATKIA AKILA KARIM	
MEHEDI HASAN	
SAIKAT BAUL	
ZINNIYA TAFFANUM PRITEE	

XVIII – Verification:

Prepared by: Raihan Mahmud --- **MD. RAIHAN MAHMUD** Date: 01/11/2025	**Moderated by:** --- **Dr. DR. MOHAMMAD MAHMUDUL HASAN** *Point Of Contact* *OBE Implementation Committee for CS* Date:	
Checked by: ..... **Dr. Debajyoti Karmaker** *Head (Undergraduate Program)* *Department of Computer Science* Date:	**Certified by:** ..... **Dr Md Abdullah Al Jubair** *Director*, *Faculty of Science & Information Technology* Date:	**Approved by:** ..... **Dr. Dip Nandi** *Associate Dean*, *Faculty of Science & Information Technology* Date: .....