Ahsanullah University of Science and Technology
Bangladesh

COURSE OUTLINE

1. Title: **Information System Design and Software Engineering Lab**

2. Code: **CSE3224**

3. Credit hours: **0.75**

4. Level: **Level 3 Term 2**

5. Faculty: **Engineering**

6. Department: **Computer Science and Engineering (CSE)**

7. Programme: **Bachelor of Science in Computer Science and Engineering (B.Sc. in CSE)**

8. Synopsis from the Approved Curriculum:

Laboratory works based on CSE3223.

Information System Design

Information and System; Systems Analysis and Systems Analyst; Information gathering techniques; Structured analysis of systems; Feasibility Study: Concepts (abstraction, refinement, modularity and hierarchy) and classification, Introduction to modeling language (Use case diagram, Sequence diagram and Activity diagram), Cost-benefit analysis; Project scheduling; System design techniques; User interface design.

Software Engineering

Introduction to system engineering and software engineering; Software requirements analysis, modeling and specification; Software Designing: principles, models, design patterns and specification; Software testing: objectives and principles, testability, testing design and implementation models and documentation, verification, validation and debugging; Quality factors and metrics for different software engineering phases; Software project management issues.

9. Type of course (core/elective): **Core**

10. Prerequisite(s) (if any): **Nil**

11. Name of the instructor(s) with contact details and office hours:

Dr.-Ing. Nusrat Jahan Lisa
Room:
Phone:
E-mail: nusratlisa.cse@aust.edu
Office hour:

AKM Ahsanul Hoque
Room:
Phone: 01713363703
E-mail: ahoque707@gmail.com
Office hour:

12. Semester Offered: **Spring 2021**

13. Mapping of Course Outcomes with Bloom's Taxonomy and Programme Outcomes
After successful completion of the course, the students will be expected to:

Sl. No.	COs	POs	Bloom's Taxonomy		
			C	A	P
1	**Prepare and present the SRS document and Project plan of a given software system.**	**2,9**			**2**
2	**Develop and present different design documents to show physical and logical view using UML and ER Modeling for the given system.**	**3,10**			**2,3**
3	**Implement the designed software in an object-oriented language for the chosen system with appropriate documentation.**	**5**			**3**
4	**Adaptation of the different testing methods at each phase of SDLC.**	**4**			**4**

14. Mapping of COs with Knowledge Profiles, Complex Engineering Problem Solving and Complex Engineering Activities

Course Outcome	Knowledge Profile	Complex Problem Solving	Complex Engineering Activities
CO1	**K3**		
CO2	**K4**		
CO3	**K8**		
CO4	**K6**		
CO5	**K5**		

15. Percentages of Assessment Methods

Method	Percentage
Attendance and Class Performance	**20**
Project Proposal	**10**
Individual Presentation (Formal)	**10**
Individual Question Answering	**10**
Requirements Survey, Requirement Analysis and Prototyping Report	**10**
UML Diagram and Report	**15**
Project Progress Evaluation	**10**
Final Presentation & Project Evaluation	**15**

16. Week wise distribution of contents and assessment methods

Week	Topics	Assessment Method(s)
1	**Group Formation, Project Proposal and Project Assignment**	**Group Presentation**
2	**Requirement Analysis: Process Model & Prototyping**	**Group Presentation & Report**
3	**Use Case Diagram, Use Case Narrative, Activity Diagram & Swim lane Diagram, Class Diagram, Collaboration Diagram, CRC**	**Group Presentation & Report**

4	**Sequence Diagram, Data Flow Diagram, PSPEC, CSPEC**	**Group Presentation & Report**
5	**Project Estimation and Project Costing**	**Group Presentation & Report**
6	**Project Progress Report & Evaluation**	**Group & Individual**
7	**Final Project Report Evaluation and Presentation.**	**Group Presentation & Report**

17. References

17.1. Required (if any)

1. ***Software Engineering: A Practitioner's Approach (8th Edition)***
   Authored by: Roger S. Pressman
   Publisher: McGraw-Hill College

2. ***Software Engineering: A Practitioner's Approach (7th Edition)***
   Authored by: Roger S. Pressman
   Publisher: McGraw-Hill College

3. ***Software Engineering (9th Edition)***
   Authored by: Ian Sommerville
   Publisher: Addison Wesley.

4. ***Systems Analysis and Design (8th Edition)***
   Authored by: Kenneth Kendall
   Publisher: Pearson Education Limited

17.2. Recommended (if any)

Prepared by:	Checked by:	Approved by:
Signature: _____ Name: **Dr.-Ing. Nusrat Jahan Lisa & AKM Ahsanul Hoque** Department: **CSE** Date:	Signature: _____ Name: **Mr. H M Zabir Haque** **OBE Program Coordinator, CSE** Date:	Signature: _____ Name: **Professor Dr. Mohammad Shafiul Alam** HOD, **CSE** Date:

Annex-1: PEO of CSE

PEO1 - Professionalism

Graduates will demonstrate sound professionalism in computer science and engineering or related fields.

PEO2 – Continuous Personal Development

Graduates will engage in life-long learning in multi-disciplinary fields for industrial and academic careers.

PEO3 – Sustainable Development

Graduates will promote sustainable development at local and international levels.

Annex-2: Mapping of PEO-PO

	PEO1	PEO2	PEO3
PO1 - Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	✓		
PO2 - Problem analysis: Identify, formulate, research and analyze complex engineering problems and reach substantiated conclusions using the principles of mathematics, the natural sciences and the engineering sciences.	✓		
PO3 - Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns.	✓		
PO4 – Investigation: Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.	✓		
PO5 - Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	✓		
PO6 - The engineer and society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.	✓		✓
PO7 - Environment and sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.	✓		✓
PO8 – Ethics: Apply ethical principles and commit to professional ethics, responsibilities and the norms of engineering practice.	✓		

PO9 - Individual work and teamwork: Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings.	٧		
PO10 – Communication: Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.	٧		
PO11 - Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member or a leader of a team to manage projects in multidisciplinary environments.	٧		
PO12 - Life-long learning: Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change.			

Annex-3: Blooms Taxonomy *

Level	Cognitive Domain – Revised Version	Affective Domain	Psychomotor Domain
1	Remember (1)	Receiving Phenomena (1)	Perception (1)
2	Comprehend (2)	Responding to Phenomena (2)	Set (2)
3	Apply (3)	Valuing (3)	Guided Response (3)
4	Analyze (4)	Organizing Values (4)	Mechanism (4)
5	Evaluate (5)	Internalizing Values (5)	Complex Overt Response (5)
6	Create (6)		Adaption (6)
			Origination (7)

* Based on "REVISED BLOOM'S TAXONOMY INDICATOR v3.31" , available at http://adept.mmu.edu.my/wp-content/uploads/2018/09/Blooms-Taxonomy-Indicator-v3.31.xls

Annex-4: Knowledge Profile

	BAETE MANUAL 2019, 2nd ed. (TABLE 4.1) - KNOWLEDGE PROFILE	
K1	**Natural sciences**	A systematic, theory-based understanding of the natural sciences applicable to the discipline.
K2	**Mathematics**	Conceptually-based mathematics, numerical analysis, statistics and formal aspects of computer and information science to support analysis and modelling applicable to the discipline.
K3	**Engineering fundamentals**	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
K4	**Specialist Knowledge**	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
K5	**Engineering Design**	Knowledge that supports engineering design in a practice area.
K6	**Engineering Practice**	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.
K7	**Comprehension**	Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.
K8	**Research literature**	Engagement with selected knowledge in the research literature of the discipline.