Green University of Bangladesh

Department of Computer Science and Engineering

Course Outline

1 General Information

Faculty	Faculty of Science and Engineering (FSE)
Department	Department of Computer Science and Engineering (CSE)
Programme	Bachelor of Science in Computer Science and Engineering
Semester	**Spring 2024**
Course Title	*Integrated Design Project II*
Course Code	CSE 406
Course Credit	1.5 units
Contact Hours	2.5/week
Course Status	Core
Prerequisite Course	CSE 324

2 Course Instructors

Section	Name	Office	Email
Old_Batch(Day+Eve)	Md. Saiful Islam Bhuiyan	A608	saiful_islam@cse.green.edu.bd

3 Laboratory and Counseling Hours

Section	Room	Laboratory Weekday	Laboratory Time	Counseling Weekday	Counseling Time
Old_Batch(Day+Eve)	Online	Monday	06:30 PM - 09:00 PM	Tuesday	11:00 AM - 12:15 PM

4 Course Rationale

Students will develop some projects based on previously acquired subject knowledge.

5 Course Description

This course will enable students to undertake a “Design, build and test” exercise to enhance their skills in product re-engineering and improve their understanding of the project implementation phase. In addition to the engagement in life-long learning in the broadest context of technological change, students will be able to gather sustainable experience in individual and teamwork along with project management and finance.

6 Teaching Methods

Lecture, Laboratory experiments, Project developments and Discussion.

7 Course Outcomes

CO	CO Description	PO	Domain (LoBT)	Weight	WK	WP	EA	Assessment Methods
CO1	To develop a computing system to solve a relevant complex engineering problem	PO3	Cognitive (C5)	15%	WK5	WP1, WP3		Please refer to Section 8.
CO2	To evaluate the performance of the proposed system by comparing with the existing similar systems considering experimental results/data analysis to provide a rational conclusion of the proposed system	PO4	Cognitive (C6)	15%	WK8	WP4, WP7		
CO3	To identify appropriate modern engineering tools or IT equipment to develop the proposed system	PO5	Psychomotor (P6)	10%	WK6			
CO4	To apply the ethical principles and responsibilities for implementing and managing the development process of the proposed system	PO8	Affective (A3)	05%	WK7	WP6		
CO5	To demonstrate the leadership skills to work in groups and as an individual member through the entire Integrated Design Project II work	PO9	Psychomotor (P6)	30%			EA1, EA2	
CO6	To present constructive reports of the proposed system with effective demonstration and oral communication skills	PO10	Psychomotor (P3)	15%			EA1	
CO7	To learn modern engineering knowledge and concepts or tools and techniques for designing and implementing a successive computing solution through the activities of Integrated Design Project II	PO12	Affective (A5)	10%			EA3, EA5	

Legend:

CO: *Course Outcome*
WK: *Knowledge Profile* (Appendix: B)
EA: *Complex Engineering Activities* (Appendix: D)
PO: *Program Outcome* (Appendix: A)
WP: *Complex Problem Solving* (Appendix: C)
LoBT: *Level of Bloom's Taxonomy* (Appendix: E)

8 Assessment Methods of COs

Assessment Method	CO1	CO2	CO3	CO4	CO5	CO6	CO7	Total
Continuous Team Evaluation	5%		5%		10%		5%	25%

Weekly Progress Report					10%		5%	15%
Project Presentation and project Report	5%	10%		5%	5%	5%		30%
Lab Final and viva	5%	5%	5%		5%	10%		30%
Total	15%	15%	10%	5%	30%	15%	10%	100%

9 Lab Activity Outline

Class	Experiment Title	COs	Reference	Activities
1	Requirement Specification and SDLC Model Selection for a specific project	1	Lab Experiment No. 01	Question-answer
2	Develop System Architecture (Part I: High-Level Design) for the given project	1, 2	Lab Experiment No. 02	Experiments
3	Develop System Architecture (Part I: High-Level Design) for the given project (Contd.)	1, 2	Lab Experiment No. 02	Experiments
4	Develop System Architecture (Part II: Low-Level Design) for the given project	1, 2	Lab Experiment No. 03	Experiments
5	System implementation (system setup, tools and techniques selection) for the given project	3	Lab Experiment No. 04	Experiments
6	Graphical User Interface design for the given project	4, 6	Lab Experiment No. 05	Experiments
7	Database and backend design for the given project	5	Lab Experiment No. 06	Experiments
8	**Midterm Presentation and Viva**	1, 2, 3, 6		
9	Test cases generation to evaluate the performance of the given project	3, 7	Lab Experiment No. 07	Experiments
10	Software Testing (Part I: Automated Testing) for the given project.	3, 7	Lab Experiment No. 08	Experiments
11	Software Testing (Part II: Manual Testing) for the given project.	3, 7	Lab Experiment No. 09	Experiments
12	Software Testing (Part II: Manual Testing) for the given project (Contd.)	3, 7	Lab Experiment No. 09	Experiments
13	Develop Version Control System (Part I: GitHub repository)	3, 7	Lab Experiment No. 10	Experiments
14	Develop Version Control System (Part II: Git)	3, 7	Lab Experiment No. 11	Experiments
15	Project presentation and viva	1, 2, 3, 6		

For the definitions of **T** and **R** , Please refer to Section 10.

10 Text and Reference Materials

T Textbook:

- *Roger S. Pressman & Bruce Maxim*, **Software Engineering: A Practitioner's Approach**, 8th Edition, McGraw Hill. 2014.

R References:

- *Ian Sommerville*, **Software Engineering**, 10th Edition, Pearson Education, 2015.

11 Grading Policy

Marks Obtained	Letter Grade	Numerical Evaluation	Definition
80% and above	A+	4.00	Excellent
75% <80%	A	3.75	Excellent
70% <75%	A-	3.50	Very Good
65% <70%	B+	3.25	Good
60% <65%	B	3.00	Good
55% <60%	B-	2.75	Good
50% <55%	C+	2.50	Average
45% <50%	C	2.25	Average
40% <45%	D	2.00	Below Average
below 40%	F	0.00	Failing

12 Additional Course Policies

1. **Equipment and Aids**: Bring your own materials such as a calculator, notebook, and pen to participate effectively in classroom activities. You are NOT allowed to borrow from others inside the classroom which may potentially create distractions for your classmates.
2. **Assignments**: There will be a number of assignments for formative assessment purposes. The average of the assignment marks will be used for computing the final grade. Late submission of homework will carry a zero mark.
3. **Class Tests**: There will be at least three Class Tests taken during the semester and the best two will be counted for final grading. A class test can be taken with/without prior announcement.
4. **Examinations**: The midterm and final examinations will be a closed book, closed notes. Mobile phones are strictly prohibited in the exam hall. Please bring your own watch (non-smart) and synchronize at the beginning of the examination.
5. **Test Policy**: In case of missing a test without prior notice to the respected faculty member, a zero mark will be given. No makeup tests will be taken as the best two test scores will be considered for grading out of three tests.
6. **Mobile Devices Policy**: Empirical evidence of using multitasking devices such as laptops and smartphones in the classroom hinders the learning experience. Thus, the use of multitasking devices is strictly discouraged. Switch off your laptop/mobile devices during class activities.

13 Additional Information

Please click or scan:

Academic Calendar Spring, 2024:

Academic Information and Policies:

Proctorial Rules:

Grading and Performance Evaluation:

Md. Saiful Islam Bhuiyan
Course Coordinator, CSE 406
May 15, 2024

Prof. DR. MUHAMMAD AMINUR RAHAMAN
Chairman, Department of CSE
May 15, 2024

Appendix A : Program Outcomes

POs	Category	Program Outcomes
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 the literature and analyze complex engineering problems and reach substantiated conclusions using first 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	Investigations	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 the 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.
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.
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.
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.

Appendix B : Knowledge Profile

Knowledge Profile	Attribute
WK1	A systematic, theory-based understanding of the natural sciences applicable to the discipline
WK2	Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer and information science to support analysis and modeling applicable to the discipline
WK3	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline
WK4	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
WK5	Knowledge that supports engineering design in a practice area
WK6	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline
WK7	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

WK8	Engagement with selected knowledge in the research literature of the discipline

Appendix C : Range of Complex Engineering Problem Solving

Attribute	Identity	Complex Engineering Problem Description
Depth of knowledge required	WP1	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
Range of conflicting requirements	WP2	Involve wide-ranging or conflicting technical, engineering and other issues
Depth of analysis required	WP3	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
Familiarity of issues	WP4	Involve infrequently encountered issues
Extent of applicable codes	WP5	Are outside problems encompassed by standards and codes of practice for professional engineering
Extent of stakeholder involvement and conflicting requirements	WP6	Involve diverse groups of stakeholders with widely varying needs
Interdependence	WP7	Are high-level problems including many component parts or sub-problems

Note: Complex Engineering Problems have identity P1 and some or all of P2 to P7.

Appendix D : Range of Complex Engineering Activities

Attribute	Identity	Activity Description
Range of resources	EA1	Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies)
Level of interaction	EA2	Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues
Innovation	EA3	Involve creative use of engineering principles and researchbased knowledge in novel ways
Consequences for society and the environment	EA4	Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation
Familiarity	EA5	Can extend beyond previous experiences by applying principles-based approaches

Note: Complex activities means (engineering) activities or projects that have some or all of the above activities.

Appendix E : Domain and Level of Bloom's Taxonomy

Cognitive Domain		Psychomotor Domain		Affective Domain	
C1	Remembering	P1	Perception	A1	Receive
C2	Understanding	P2	Set	A2	Respond
C3	Applying	P3	Guided Response	A3	Value
C4	Analyzing	P4	Mechanism	A4	Organize
C5	Evaluating	P5	Complex Overt Response	A5	Internalize
C6	Creating/ Designing	P6	Adaption		
		P7	Origination		