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Institutional Quality Assurance Cell (IQAC) Presents

Implementation of OBE Curriculum: Continuous Improvement and Associated Challenges

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* Program Self-Assessment Committee (**PSAC**) – Dept of **ICT**

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MBSTU, Tangail-1902

“ আমি খেটে খাওয়া
মানুষের কথা বলি।

মজলুম জননেতা
মওলানা আবদুল হামিদ খান ভাসানী

(১২ ডিসেম্বর ১৮৮০ - ১৭ নভেম্বর ১৯৭৬)

PRESENTATION OUTLINE

- **MISSING ELEMENTS IN THE CURRENT SYLLABUS**
- SAMPLE PO OUTCOMES MAPPING – ICT
- SDG GOAL ORIENTATION WITH THE PO (ICT)
- CHALLENGES IN ADOPTING OBE CURRICULUM
- LEARNING FRAMEWORK
- PEDAGOGICAL TOOLS
- QUESTIONS AND SAMPLE RESULT PROCESSING

MISSING ELEMENTS IN THE CURRENT SYLLABUS

- ❑ Vision and Mission Statement of the Dept
- ❑ Program Education Objectives (PEO) and Mapping
- ❑ Program Description
- ❑ Learning Framework
- ❑ Global & Sustainable Orientation
- ❑ Graduate Attributes
- ❑ Program Outcomes (POs), Course Outcomes (CO) and Mapping
- ❑ Pedagogical Framework achieve outcomes.

SAMPLE PO OUTCOMES MAPPING - ICT

PO	Title	Key Focus	Bloom's Level	Linked SDGs	BNQF Domain
PO1	Knowledge & Problem Solving	Solid foundation in math, science, and ICT; ability to identify, analyze, and solve ICT problems	Understand, Apply, Analyze	SDG 4, 9	Knowledge, Cognitive Skills
PO2	Design & Innovation	Create sustainable, reliable, user-centric ICT systems considering global, cultural, and economic factors	Create	SDG 9, 11	Knowledge Application, Innovation & Creativity
PO3	Research & Modern Tools	Conduct experiments, analyze data, and apply modern ICT tools (AI, IoT, analytics, simulation) effectively	Analyze, Apply, Evaluate	SDG 4, 9	Research, Problem-Solving, Digital Skills
PO4	Ethics & Responsibility	Evaluate legal, social, and ethical impacts of ICT; uphold professional integrity and inclusiveness	Apply, Evaluate	SDG 16	Values, Ethics, Social Contribution
PO5	Sustainability & Global Impact	Promote sustainable ICT solutions addressing energy, environment, and climate challenges	Evaluate	SDG 12, 13	Environment & Sustainability, Social Skills
PO6	Communication, Leadership & Lifelong Learning	Communicate effectively, work in teams, manage projects, show entrepreneurship, and adapt through continuous learning	Apply, Create, Evaluate	SDG 4, 8, 9, 17	Communication, Leadership, Lifelong Learning

SDG GOAL ORIENTATION WITH THE PO (ICT)

A. **Quality Education (SDG 4):** Foster inclusive, equitable, and industry-relevant ICT education that builds strong foundational knowledge.
B. **Industry, Innovation & Infrastructure (SDG 9):** Equip students with advanced digital skills to drive sustainable innovation and resilient systems.
C. **Sustainability & Climate Action (SDGs 11, 12, 13):** Promote eco-efficient design, green computing, and ICT solutions that support sustainable cities and environmental protection.
D. **Ethics, Governance & Justice (SDG 16):** Instill professional integrity, social responsibility, and ethical ICT practices in diverse contexts.
E. **Global Collaboration & Partnerships (SDG 17):** Encourage teamwork, leadership, and cross-border cooperation to solve global ICT challenges.

LEARNING FRAMEWORK (B.Sc. Engg in ICT)

The curriculum is structured on Bloom's Taxonomy and aligned with the Bangladesh National Qualifications Framework (BNQF). It progressively develops students' competencies across knowledge, skills, and values:

- **Remembering & Understanding** fundamental concepts, ensuring a strong foundation in ICT principles (BNQF: Knowledge).
- **Applying & Analyzing** complex problems through practical tasks, research, and the use of modern tools (BNQF: Cognitive and Practical Skills).
- **Evaluating & Creating innovative ICT systems and solutions** that address societal, ethical, and sustainable development challenges (BNQF: Values, Ethics, Innovation, and Lifelong Learning).

GRADUATE ATTRIBUTES – B.SC. (ENGG.) IN ICT

I. **Technological Competence:** Apply ICT knowledge and skills to solve real-world problems effectively.
II. **Social Responsibility:** Demonstrate ethical awareness and contribute to sustainable technology practices.
III. **Critical Thinking & Innovation:** Analyze challenges creatively and design future-ready solutions.
IV. **Communication & Leadership:** Work collaboratively, lead teams, and communicate across disciplines.
V. **Lifelong Learning:** Commit to continuous self-development and active contribution to society.

PEDAGOGICAL TOOLS

I. **Interactive Lectures** – Concept delivery with active questioning, discussion, and problem walkthroughs
II. **Laboratory Sessions** – Programming, networking, and system design labs for hands-on learning
III. **Project-Based Learning** – Team projects simulating real-world ICT challenges
IV. **Case Studies & Simulations** – Industry-inspired scenarios, AI-based simulation platforms
V. **Capstone Projects & Thesis** – Independent research and innovation opportunities

PROGRESS IN OBE-CURRICULUM DEVELOPMENT

I. Formation of internal committees for investigation and development
II. Draft OBE-based syllabus for selected courses completed
III. Reference OBE syllabi collected from BUET, DU, RU, JU, KUET, and KU
IV. Timeline for completion plan prepared
V. Initial challenges identified and documented
VI. OBE-based Question Development adopted in some semesters
VII. Curriculum development work is actively in progress

SAMPLE QUESTION

Mawlana **B**hashani **S**cience and **T**echnology **U**niversity

Department of Information and Communication Technology (ICT)

3rd Year 2nd Semester B.Sc.(Engg.) Final Examination 2024

Course Title: Software Engineering | Course Code: **ICT – 3209**

Total Marks: 7**0** | Time: **3** hours (180 Min)

Overview

The Software Engineering course is designed to equip students with the knowledge and skills required to develop high-quality software solutions efficiently. It focuses on software development methodologies, design principles, testing strategies, project management, and best practices in the field. The course emphasizes a systematic and disciplined approach to software development, ensuring reliability, maintainability, and scalability in modern applications.

Bloom's Taxonomy

A. Remembering	B. Understanding	C. Applying
D. Analyzing	E. Evaluating	F. Creating

Program Outcomes (POs)

- PO1: Problem-Solving and Computational Thinking
- PO2: Software Development and Programming Skills
- PO3: Data Structures and Algorithm Optimization
- PO4: System Design and Performance Considerations
- PO5: Software Engineering Principles and Best Practices

Course Outcomes (COs)

- CO1: Understanding Agile & Scrum Concepts
- CO2: Applying Software Testing
- CO3: Analyzing the concept of Requirements Engineering and Software Design
- CO4: Practical Implication of Software Reliability & Maintenance,
- CO5: Understanding Software Prototyping & RAD, Security & Ethics

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Total Marks: 7**0** | Time: **3** hours (180 Min)

Answer any five (05) sets of the following questions

1. *(a)* In a Scrum-based software development project, the Product Owner has defined the following user stories for an e-commerce application: **5**

   - As a user, I want to log in securely so that I can access my account.
   - As a user, I want to search for products by category to find items easily.

   I. Create a product backlog for these user stories by breaking them into tasks.

   II. Describe how the development team can prioritize these user stories during a Sprint Planning meeting, considering value to the customer and technical feasibility.

   III. Illustrate how these tasks will be tracked using a Scrum board. Use proper terms like "To Do," "In Progress," and "Done."

   (b) A company is working on two different projects. Project A has well-defined requirements and a strict deadline, while Project B has evolving requirements with an uncertain timeline and continuous customer feedback. Both projects involve high stakes, and the team must decide which development methodology to use. **5**

   Compare and contrast the Waterfall, Agile, Extreme, and Spiral development models. Based on the characteristics of both projects (Project A and Project B), which methodology would best suit each? Support your answer with a

SAMPLE RESULT PROCESSING

Raw Marks, MBSTU-0111 1000, 4th year 1st Semester

Assessments (Lab test, Quiz, Final exam)			Assesment (30)			Mid Exam (20)			Final Exam (50)									
			Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2(a)	Q2(b)	Q3(a)	Q3(b)	Q4	Q5(a)	Q5(b)	Q5(c)	Q6	
Course Outcomes (COs)			CO1	CO2	CO5	CO1	CO2	CO5	CO1	CO3	CO5	CO1	CO5	CO5	CO1	CO3	CO4	CO4	
Program Outcomes (POs)			PO1	PO2	PO5	PO1	PO2	PO5	PO1	PO2	PO5	PO1	PO5	PO5	PO1	PO2	PO3	PO3	Total marks
Distribution of Marks			10	10	10	6.66	6.66	6.66	8.4	5	3.3	3.33	5	8.3	1.66	3.33	3.3	8.4	100
SL	ID	Name																	
1			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2			0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.67	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.67	3.67
3			10.00	8.00	4.00	0.67	0.67	1.00	4.00	5.00	3.33	1.67	2.33	4.00	0.00	0.00	0.00	3.00	47.67
4			10.00	7.00	6.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	2.33	0.00	0.00	0.00	2.33	28.33
5			10.00	7.00	5.00	1.00	0.00	0.00	1.67	1.67	0.00	1.67	0.00	4.00	0.00	0.00	0.00	1.00	33.00
6			10.00	6.00	5.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	22.67
7			10.00	10.00	9.00	5.33	6.67	0.67	3.33	3.33	3.33	1.33	5.00	3.33	1.67	1.00	0.00	2.33	66.33
8			10.00	9.00	8.00	0.00	4.00	0.00	0.67	2.33	3.33	0.00	0.00	3.33	0.00	0.00	0.00	2.00	42.67
9			10.00	5.00	4.00	4.67	3.33	1.67	5.33	3.33	3.00	0.00	5.00	5.67	0.00	0.67	0.67	1.33	53.67
10			10.00	9.00	8.00	4.67	2.33	1.00	1.67	0.67	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	39.33
11			10.00	9.00	3.00	4.00	2.33	1.00	4.67	2.00	2.00	3.33	2.67	3.67	1.67	0.67	2.00	2.00	54.00
12			10.00	9.00	9.00	0.67	0.00	0.00	0.67	0.67	0.67	1.33	0.67	0.00	1.67	1.00	0.00	1.33	36.67
13			10.00	10.00	8.00	0.67	0.00	0.00	0.67	0.00	0.00	1.33	0.67	2.00	1.67	0.00	0.00	2.00	37.00
14			10.00	2.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	13.67
15			10.00	8.00	8.00	5.33	2.33	0.67	4.33	5.00	3.33	0.00	5.00	6.00	0.00	0.00	1.00	1.33	60.33
16			10.00	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.00
17			10.00	8.00	7.00	5.33	4.67	1.33	3.00	0.67	1.33	0.67	2.00	4.67	1.67	0.00	1.67	3.00	55.00
18			10.00	9.00	8.00	4.67	6.67	1.33	6.33	3.33	3.00	3.33	5.00	5.00	1.67	0.67	2.67	4.00	74.67

SAMPLE RESULT PROCESSING

4th year 1st Semester Assessment Report (eSCAR), MBSTU-0111 1000, Department of ICT, MBSTU									
Course:Teaching with Canvas , MBSTU-0111 1000, Section A: Course Teacher: Dr. Ziaur Rahman, Dept of ICT, MBSTU									
Total number of students in this course					47				
eSCAR of COs					eSCAR of POs				
Course Outcomes (COs)	Semester Spring 2022				Program Outcomes (POs)	Semester Spring 2022			
	CO attainments			Action plan of non-attainable COs / improve COs attainment in next semester		PO attainments			Action plan of non-attainable PO
	No. of students	%	Attainment			No. of students	%	Attainment	
CO1	34.00	72.34	Yes	Will provide more emphasis on CO1 in lecture and assignments and closely monitor progress of students to improve CO1.	PO1	34.00	72.34	Yes	Will provide: more emphasis on its lecture topics and assignments and closely monitor progress of students
CO2	42.00	89.36	Yes	Will provide: more emphasis on CO2 in lecture and assignments and closely monitor progress of students	PO2	36.00	76.60	Yes	Will provide: more emphasis on its lecture topics and assignments and closely monitor progress of students
CO3	11.00	23.40	No	Will provide: more emphasis on CO3 in lecture and assignments and closely monitor progress of students	PO3	6.00	12.77	No	
CO4	6.00	12.77	No	Will provide: more emphasis on CO4 in lecture and assignments and closely monitor progress of students	PO5	19.00	40.43	No	
CO5	19.00	40.43	No	Will provide: more emphasis on CO5 in lecture and assignments and closely monitor progress of students					
Proposed Attainment of CO and PO of the course= if 60% students pass the particular CO and PO									
*Attainment marks should be based on the decision of the academic council of the University									

CHALLENGES IN ADOPTING OBE CURRICULUM

- Policy/Ordinance Limitations
- Shortage of Qualified Teachers and Teaching Loads
- Limited Training and Expertise
- Inadequate Infrastructure
- Student Readiness
- Unprepared Assessment Systems
- Administrative and Cultural Barriers

Draft OBE Syllabus - ICT

- https://github.com/rahmanziaur/ICT-OBE-PSAC-2025/blob/main/ICT-1101%201102%20ICT%20OBE-Curriculum-1.2.pdf

Referred Resources

- https://www.portcity.edu.bd/files/OBE-semester.pdf
- https://cse.sds.bracu.ac.bd/course/obeCurriculum
- https://cse.buet.ac.bd/public/docs/studies/Course_Info_Booklet_2023.pdf
- https://www.mist.ac.bd/storage/files/cse/downloads/UG

QUESTION?


Thank
You