COMSATS University Islamabad, Sahiwal Campus

1. The following Program Educational Objectives (PEOs) for Bachelor of Science in Civil Engineering program, should be effective from Fall 2023:

Revised Program Educational Objectives (PEOs)

PEO1	Demonstrate competence in the professional practice of Civil Engineering.
PEO2	Fulfill the needs of society on identifying and solving technical challenges in the field of Civil Engineering using fundamental engineering principles with modern tools and practices in an ethical and socially responsible manner.
PEO3	Demonstrate competence while applying civil engineering practices by exhibiting organizational skills through professional growth and development activities.

Program Learning Outcomes (PLOs)

PLO1	Engineering Knowledge-Apply knowledge of mathematics, science, engineering	C
	fundamentals and an engineering specialization to the solution of complex engineering	
	problems.	
PLO2	Problem Analysis -Identify, formulate, research literature and analyze complex	C
	engineering problems reaching substantiated conclusions using first principles of	
	mathematics, natural sciences and engineering sciences.	
PLO3	Design/Development of Solutions -Design solutions for complex engineering problems	C
	and design systems, components or processes that meet specified needs with appropriate	
	consideration for public health and safety, cultural, societal, and environmental	
	considerations.	
PLO4	Investigation-Conduct investigation into complex problems using research-based	C/P/A
	knowledge and research methods including design of experiments, analysis and	
	interpretation of data, and synthesis of information to provide valid conclusions.	
PLO5	Modern Tool Usage-Create, select and apply appropriate techniques, resources, and	C/P/A
	modern engineering and IT tools, including prediction and modelling, to complex	
	engineering activities, with an understanding of the Limitations.	
PLO6	The Engineer and Society-Apply reasoning informed by contextual knowledge to assess	C
	societal, health, safety, legal and cultural issues and the consequent responsibilities	
	relevant to professional engineering practice.	
PLO7	Environment and Sustainability-Understand the impact of professional engineering	C/P/A
	solutions in societal and environmental contexts and demonstrate knowledge of and need	
	for sustainable development.	
PLO8	Ethics -Apply ethical principles and commit to professional ethics and responsibilities and	C
	norms of engineering practice.	
PLO9	Individual and Team Work–Function effectively as an individual, and as a member or	C/P/A
	leader in diverse teams and in multi-disciplinary settings.	

PLO10	Communication -Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	С
PLO11	Project Management and Finance-Demonstrate knowledge and understanding of	C
	engineering and management principles and apply these to one's own work, as a member	
	and leader in a team, to manage projects and in multidisciplinary environments.	
PLO12	Life-long Learning- Recognize the need for, and have the preparation and ability to engage	C/P/A
	in independent and life-long learning in the broadest context of technological change.	0, 0, 1

Nature of PLO (Legend)

C: Cognitive

A: Affective

P: Psychomotor

Mapping of PLOs with PEOs

Sr#	PLO	PEO 1	PEO 2	PEO 3
1	Engineering Knowledge	V		4
2	Problem Analysis	V		
3	Design/Development of Solutions	V		
4	Investigation	V		
5	Modern Tool Usage		V	
6	The Engineer and Society		V	
7	Environment and Sustainability		V	
8	Ethics		v	
9	Individual and Team Work			~
10	Communication			~
11	Project Management			V
12	Lifelong Learning			~

Cognitive Domain (thinking, knowledge)

C5

Synthesis

Definition: Formulate new structure from existing knowledge and skills Sample Verbs

- Combine
- Construct
- Design Develop
- Generate Plan

Propose

Definition: Judges the value of material for given purpose

C₆ Evaluation

- Sample Verbs Assess
 - Conclude Evaluate

 - Interpret Justify
 - Select
 - Support

C4

Analysis

Understand both the content and structure of

> material Sample Verbs

Definition:

- Analyze Categorize
- Compare Contrast
- Differentiate
- Discriminate
- Outline

Comprehension

Grasps the meaning of

material (Lowest level of understanding)

Remembers previously Sample Verbs

Describe

Lower Leve

- Discuss Explain
- Locate
- Paraphrase
- - Translate

Carryout Demonstrate

Definition:

Illustrate Prepare

Apply

C3

Application

Uses learning in new and

concrete situations

(Higher level of

understanding)

Sample Verbs

Solve Use

Give Example

Intermediate Level

Higher Level

C2

C1 Definition:

Knowledge

Definition:

learned material Sample Verbs

- Define
- Identify
- Label List
- Name
- Recall

State

Affective Domain (feeling, attitudes)

Organization

Definition:

Conceptualize the value and resolves conflict between it and other values Sample Verbs

- Adapt
- Adjust
- Arrange
- Balance Classify
- Conceptualize
- Formulate Group
- Organize
- Rank
- Theorize

A5 Internalizing

Definition: Integrates the value into a value system that controls behavior Sample Verbs

- · Act upon
- Advocate
- Defend
- Exemplify Influence
- Justify behavior
- Maintain
- Serve

Support

Valuing

Attaches values or worth to

A2 Responding

Definition:

Responds to stimuli (Lowest level of

Selectively attends to stimuli Sample Verbs

- Agree to
- Acknowledge Be aware

Receiving

- Listen
- Notice

Definition:

Sample Verbs

Pay attention

Accept

Tolerate

understanding)

- - Answer freely
 - Assist
- Care for
- Communicate
- Comply
- Confirm
- Consent
- Contribute
- Cooperate
- Follow
- Obey
- Participate
- Read
- Respond
- Visit
- Volunteer

Adopt Assume

Definition:

something

(Higher level of

understanding)

Sample Verbs

- responsibility Behave according
- Choose
- Commit
- Desire
- Exhibit loyalty
- Express
- Initiate Prefer
- Seek
- Show concern Show continual
- desire to
- Use resources to

Intermediate Level

Higher Level

Lower Level

Psychomotor Domain (doing, skills)

P4 Mechanism **P3** Definition: Guided Response Performs with increasing efficiency. confidence and proficiency P2 Definition: Sample Verbs Set Imitates and practices Complete skills, often in discrete with steps confidence Definition: (Higher level of Conduct P1 understanding) Demonstrate Perception Mentally, emotionally Sample Verbs Execute and physically ready to Efficient act Increase Definition: (Lowest level of Copy, speed understanding) Duplicate Make Senses cues that guide Sample Verbs Imitate Pace motor activity Manipulate Produce Sample Verbs Achieve Operate Show Detect, Hear Assume Practice dexterity Listen. Establish Repeat Observe Place. Try Perceive Position Recognize Sit, Stand See, Sense, Station Smell, Taste View, Watch **Intermediate Level** Lower Level

P6 Adaption

Definition: Adapt skill sets to meet a problem situation

Sample Verbs

P5

Complete Overt

Response

Performs automatically

Act

Advance

Control

Direct

Excel

Guide

Maintain

efficiency

Manage

Master

Perfect

Perform

Proceed

Organize

Definition:

Sample Verbs

- Adapts
- Recognizes
- Alters
- Revises
- Changes

P7

Organization
Definition:

Creates new patterns for specific situations Sample Verbs

- Designs
- Originates
- Combines
- Composes
- Constructs

Higher Level