

**INTRODUCTION TO  
OUTCOME BASED  
EDUCATION  
(OBE)  
SYSTEM**

# Pakistan Engineering Council (PEC)

- PEC is a statutory body to regulate the engineering profession including quality of engineering education with in the country.
- PEC accredits any engineering program for quality assurance for not more than maximum five years.
- Accreditation verifies that a program in an approved institution meets the norms and standards prescribed by Pakistan Engineering Council (PEC).

# International Engineering Alliance (IEA)

- The International Engineering Alliance (IEA) is a global organization which comprises members from 29 countries.
- The member countries (**signatories**) signed the agreements (**accords**) of **recognition of engineering educational qualifications and professional competence among member countries.**

# Washington Accord (WA)

- Washington accord is an **international agreement** between bodies responsible for accrediting engineering degree programs.
- Qualifications **accredited** or recognized by any of the signatory is **equivalently recognized** by **other signatory**.
- Pakistan along-with USA, UK, NewZeland, Australia, China are among few of the signatories of WA.
- All the signatories have adopted **Outcome Based Education (OBE)** as teaching system.

# OBE System

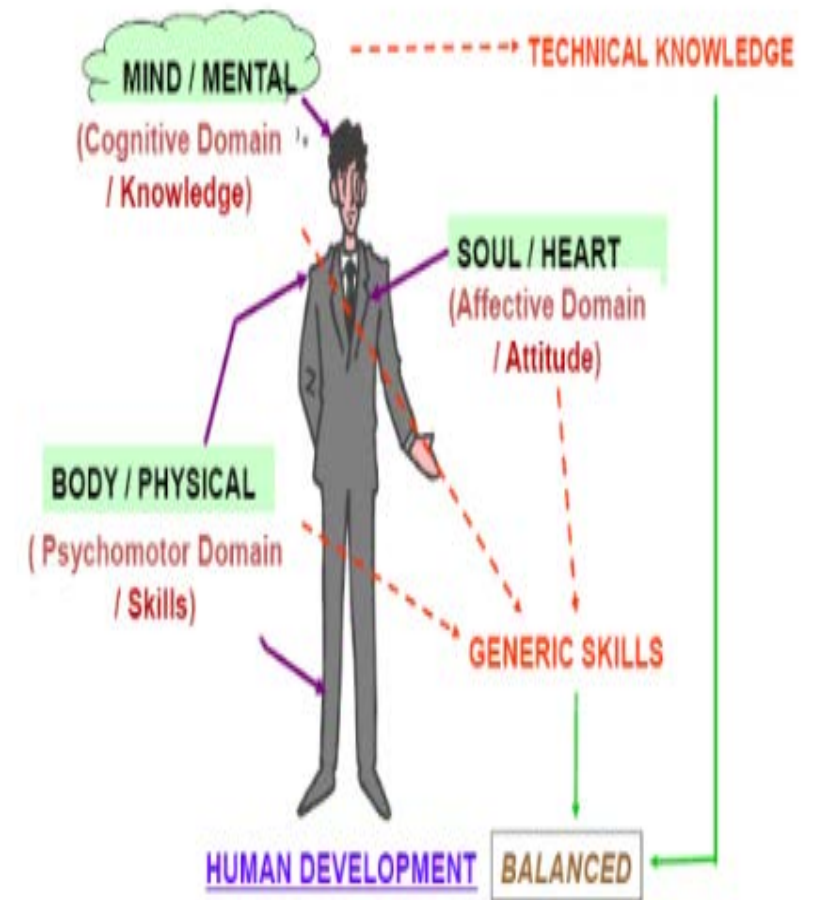
- Outcome based education (OBE) is an educational theory that forms the basis of each part of an education system around goals (outcomes).
- Outcome based education is a student centered teaching and learning methodology that focuses on what a student should be able to do in the real world upon completion of the course and program.

# Learning Domains

Benjamin Bloom, American educational psychologist, in 1956 proposed that learning fits into one of three psychological domains:

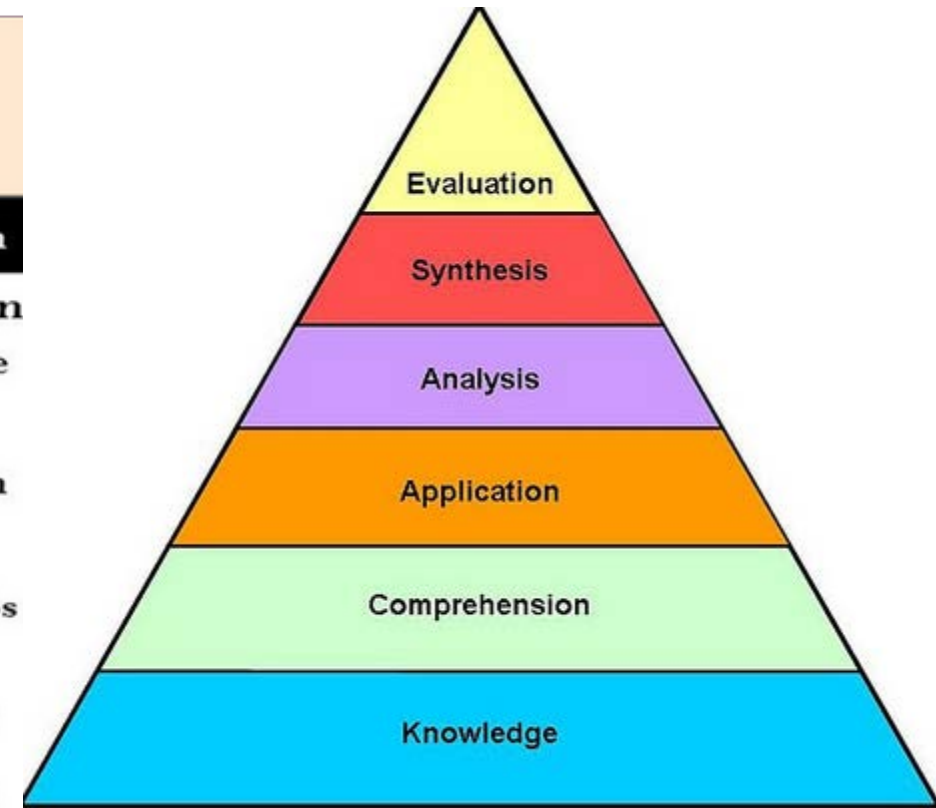
- **Cognitive** Domain – processing information, **knowledge** and mental skills
- **Psychomotor** Domain – manipulative, manual or **physical** skills
- **Affective** Domain – **Attitudes** and feelings

He has further classified each domain into different learning levels known as **taxonomy** levels.



# Taxonomy Levels of Cognitive Domain

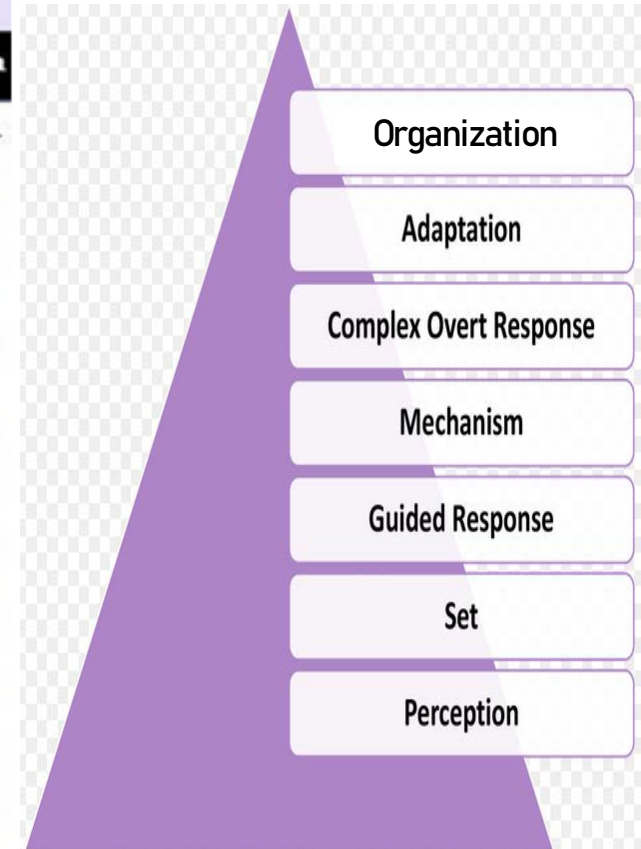
<b>Cognitive Domain</b> (Thinking, Knowledge)					
C1	C2	C3	C4	C5	C6
<b>Knowledge</b>	<b>Comprehension</b>	<b>Application</b>	<b>Analysis</b>	<b>Synthesis</b>	<b>Evaluation</b>
<b>Definition</b> Remembers previously learned material.	<b>Definition</b> Grasps the meaning of material (lowest level of understanding).	<b>Definition</b> Uses learning in new and Concrete Situations (higher level of understanding).	<b>Definition</b> Understands both the content and structure of material	<b>Definition</b> Formulates new structures from existing knowledge and skills	<b>Definition</b> Judges the value of material for a given purpose.
<b>Sample Verbs</b> . Define . Identify . Label . List . Name . Recall . State	<b>Sample Verbs</b> . Describe . Discuss . Explain . Locate . Paraphrase . Give example . Translate	<b>Sample Verbs</b> . Apply . Carry out . Demonstrate . Illustrate . Prepare . Solve . Use	<b>Sample Verbs</b> . Analyze . Categorize . Compare . Contrast . Differentiate . Outline	<b>Sample Verbs</b> . Combine . Construct . Design . Develop . Generate . Plan . propose	<b>Sample Verbs</b> . Assess . Conclude . Evaluate . Interpret . Justify . Select . Support



# Taxonomy Levels of Psychomotor Domain

## Psychomotor Domain ( Doing, Skills )

P1	P2	P3	P4	P5	P6	P7
<b>Perception</b>	<b>Set</b>	<b>Guided Response</b>	<b>Mechanism</b>	<b>Complete Overt Response</b>	<b>Adaption</b>	<b>Organization</b>
<b>Definition</b> Senses cues that guide motor activity	<b>Definition</b> Is mentally, emotionally, and Physically ready to act.	<b>Definition</b> Imitates and practices skills, often in discrete steps	<b>Definition</b> Performs acts with increasing efficiency confidence, and proficiency	<b>Definition</b> Performs automatically.	<b>Definition</b> Adapts skill sets to met a problem situation	<b>Definition</b> Creates new patterns for specific Situations.
<b>Sample Verbs</b> . Detect . Hear . Listen . Observe . Perceive . Recognize . See . Sense . Smell . Taste . View . Watch	<b>Sample Verbs</b> . achieve a posture . assume a body stance . Establish a body . place hands arms etc. . position the body . sit .stand . station	<b>Sample Verbs</b> . Copy . Duplicate . Imitate . Manipulate . Guidance . Operate under . Supervision . Practice . Repeat . Try	<b>Sample Verbs</b> . Complete with confidence . Conduct . Demonstrate . Execute . Improve efficiency . Increase speed . Make . Pace . Produce . Show . Dexterity	<b>Sample Verbs</b> . Act habitually . Advance with Assurance . Control . Excel . Guide . Maintain efficiency . Manage . Master . Organize . Perfect . Perform . Automatically	<b>Sample Verbs</b> . Adapts . Reorganizes . Alters . Revises . Changes	<b>Sample Verb</b> . Design . Originates . Combines . Composes . Constructs



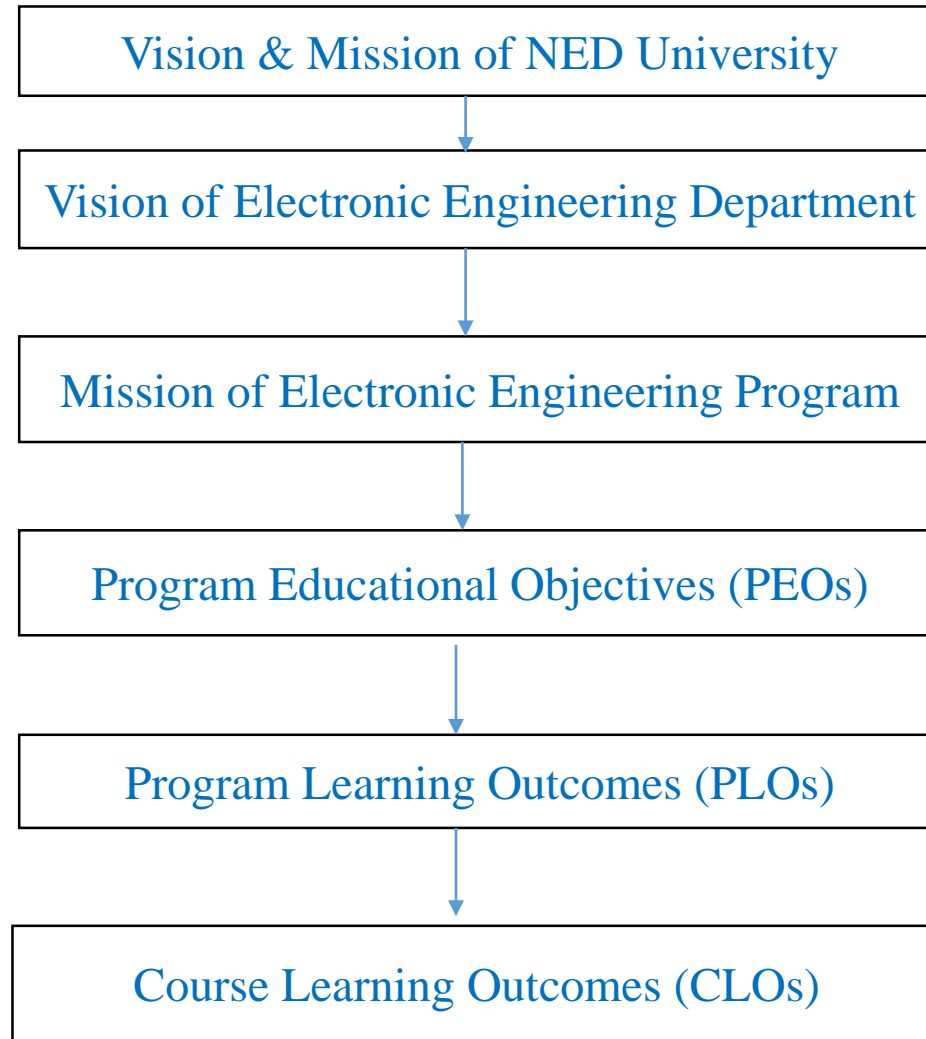


# Taxonomy Levels of Affective Domain

Affective Domain (Feeling, Attitudes)				
A1	A2	A3	A4	A5
<b>Receiving</b> <b>Definition</b> Selectively attends to stimuli. <b>Sample Verbs</b> <ul style="list-style-type: none"> <li>. Accept</li> <li>. Acknowledge</li> <li>. Be aware</li> <li>. Listen</li> <li>. Notice</li> <li>. Pay attention</li> <li>. Tolerate</li> </ul>	<b>Responding</b> <b>Definition</b> Responds to stimuli <b>Sample Verbs</b> <ul style="list-style-type: none"> <li>. Agree to</li> <li>. Answer freely</li> <li>. Assist</li> <li>. Care for</li> <li>. Communicate</li> <li>. Comply</li> <li>. Conform</li> <li>. Consent</li> <li>. Contribute</li> <li>. Cooperate</li> <li>. Follow</li> <li>. Obey</li> <li>. Participate willingly</li> <li>. Read voluntarily</li> <li>. Respond visit</li> <li>. volunteer</li> </ul>	<b>Valuing</b> <b>Definition</b> Attaches value Or worth to something <b>Sample Verbs</b> <ul style="list-style-type: none"> <li>. Adopt</li> <li>. Assume responsibility</li> <li>. Behave according to</li> <li>. Choose</li> <li>. Commit</li> <li>. Desire</li> <li>. Exhibit loyalty</li> <li>. Express</li> <li>. Initiate</li> <li>. Prefer</li> <li>. Seek</li> <li>. Show concern</li> <li>. Show continual desire to</li> <li>. Use resources to</li> </ul>	<b>Organization</b> <b>Definition</b> Conceptualizes the value and resolves conflict between it and other values. <b>Sample Verbs</b> <ul style="list-style-type: none"> <li>. Adopt</li> <li>. Adjust</li> <li>. Arrange</li> <li>. Balance</li> <li>. Classify</li> <li>. Conceptualize</li> <li>. Formulate</li> <li>. Group</li> <li>. Organize</li> <li>. Rank</li> <li>. Theorize</li> </ul>	<b>Internalizing</b> <b>Definition</b> Integrates the Value in to a Value system That controls Behavior. <b>Sample Verbs</b> <ul style="list-style-type: none"> <li>. Act upon</li> <li>. Advocate</li> <li>. Defend</li> <li>. Exemplify</li> <li>. Influence behavior</li> <li>. Justify behavior</li> <li>. Maintain</li> <li>. Serve</li> <li>. Support</li> </ul>



# Outcome Based Education (OBE) System



# Vision & Mission of NED University

- **Vision of NED University:** Be a leader in enabling Pakistan's social and economic transformation.
- **Mission of NED University:** Acquire education and research excellence in engineering and allied disciplines to produce leadership and enabling application of knowledge and skills for the benefit of the society with integrity and wisdom.

# Vision of Electronic Engineering Department

Department of Electronic Engineering aims to impart high quality education to students by providing a learning environment to develop their knowledge and skills. It is our aim to create the globally competitive electronic engineers enabling them to serve the society through sustainable engineering principles and practices.

# Mission of Electronic Engineering Program

The mission of the Electronic Engineering Program is to equip the students with engineering concepts and skills, awareness of the state of the art in electronic engineering, competence for effective communication and an aptitude towards continuously enhancing their knowledge. The students shall be able to leverage these skills in finding an Electronics related employment, pursue Post-Graduate Studies, and/or commence entrepreneurial activity while contributing towards the betterment of the society.

# Program Educational Objectives (PEOs)

Program educational objectives (PEO) are broad statements that describe what **graduates are expected** to demonstrate **four years after graduation**.

The Bachelors of Electronic Engineering programme offered by the department is designed to achieve following three program educational objectives.

- **PEO-1:** Demonstrate **technical knowledge** and competence in the practice of electronic engineering.
- **PEO-2:** To be a **team player** and provide **leadership** in engineering projects while engaging in effective professional **communication** within and beyond the engineering community.
- **PEO-3:** Continue to develop professionally through life-long learning, while considering **ethical** and **environmental** issues.

# Assessment Methods of PEOs

PEOs are assessed through

- i. Alumni Feedback Form
- ii. Employer Feedback Form
- iii. Employment Statistics

Each question of the feedback form is linked with a particular PEO.

# Key Performance Indicator (KPI) for PEO Attainment

- At least 50% of the Survey form responses must attain a score of 3 or above (on a scale of 1 to 5)
- At least 50% of the graduates must be employed and/or engaged in higher studies.



# Program Learning Outcomes (PLOs)

- Program Learning Outcomes are the narrower statements that describe what the students are expected to know and able to do by the time of graduation.
- These relate to the knowledge, skills and attitude (KSA) that the students acquire while progressing through the program.
- Electronic Engineering Program has adopted twelve graduate attributes (GAs) as Program Learning Outcomes (PLOs) mention in PEC accreditation manual.

# Program Learning Outcomes (PLOs)

- **PLO 1 -Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- **PLO 2 - Problem Analysis:** An ability to identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- **PLO 3 - Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- **PLO 4 - Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

## Program Learning Outcomes (PLOs) (Continued.....)

- **PLO 5 - Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations.
- **PLO 6 - The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
- **PLO 7 - Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- **PLO 8 - Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

# Program Learning Outcomes (PLOs) (Continued....)

- **PLO 9 - Individual and Teamwork:** An ability to work effectively, as an individual or in a team, in multifaceted and /or multidisciplinary settings.
- **PLO 10 - Communication:** An ability to communicate effectively, orally as well as in writing, 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.
- **PLO 11 - Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.
- **PLO 12 - Lifelong Learning:** An ability to recognize importance of and pursue lifelong learning in the broader context of innovation and technological developments.

# Assessment of PLOs

PLOs are assessed through

- i. Courses (Course Learning Outcomes)
  - ii. FYDP (Assessed through pre-defined rubrics)
  - iii. Internship Feedback Form
  - iv. Exit Survey Forms
- Courses are mapped on PLOs. At least six of the total courses offered in Engineering program must be mapped on a particular PLO.
  - Each question of the feedback/ survey form is mapped on a particular PLO.

# **Key Performance Indicator (KPI) for PLO Attainment**

Will be discussed later

# Course Learning Outcomes (CLOs)

- Course Learning Outcomes are the statements that describe what the students are expected to know by the time of completion of the course.
- Each CLO of a course is mapped on a particular PLO.
- CLO also describes the leaning domain (cognitive, psychomotor or affective) and the taxonomy level (C4, P3.....)

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME			
Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	<b>Discuss</b> principles of electrical circuits.	<b>C2</b>	<b>PLO-1</b>
2	<b>Solve</b> electrical circuits using relevant laws & theorem.	<b>C3</b>	<b>PLO-2</b>
3	<b>Practice</b> of operating equipment/tools to understand principles of electrical circuits under supervision.	<b>P3</b>	<b>PLO-1</b>

# Mapping of First Year Electronic Engineering Courses to PLOs

Electronic Engineering Courses			Program Learning Outcomes (PLOs)												
			PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10	PLO-11	PLO-12	
First Year	Fall	EA-111 Functional English											C2, C6, A3		
		EE-120 Basic Electrical Engineering	C2, P3	C3											
		MT-171 Differential & Integral Calculus	C1	C3											
		EL-104 Electronic Engineering Drawing & Workshop					C3				P3				
		PH-112 Applied Physics	C2, P3	C3, C3											
		EL-105 Computer and Programming			C3	C4		C5							
	Spring	EE-121 Circuit Analysis		C4, C4			P3								
		EL-106 Basic Electronics	C3	C4		P3									
		MT-227 Differential Equations	C2	C3											
		ME-110 Basic Mechanical Engineering	C2	C3											
		CY-110 Applied Chemistry for Engineers	C2, P3	C3, C3											
		ES-105 Pakistan Studies /ES-127 Pakistan Studies (For Foreigners)						C2							C2
		EL-201 Electronic Design and Circuit													



# Assessment in Three Learning Domains

- **Cognitive Domain** (thinking): Assessed through
  - a) Quizzes
  - b) Test
  - c) Midterm
  - d) Assignment
  - e) Final Exam
  - f) Complex Engineering Problem (Assessed through rubrics)
- **Affective Domain** (Attitude and feelings): Assessed through **pre-defined rubrics**
  - a) Presentations
  - b) Group Activities
  - c) Interview
  - d) Group Discussion
  - e) Field Trip
  - f) Survey
- **Psychomotor Domain** (Motor Skills): Assessed in **lab** through **pre-defined rubrics**
  - a) Lab Performance
  - b) Open Ended Lab

# Rubric

A rubric is an explicit set of criteria used for assessing a particular type of work or performance.

# Psychomotor Domain Assessment Rubric (P3)

<b>Psychomotor Domain Assessment Rubric-Level P3</b>					
Skill Sets	Extent of Achievement				
	0	1	2	3	4
<b><u>Equipment Identification</u></b> Sensory skill to <i>identify</i> equipment and/or its component for a lab work.	Not able to identify the equipment.	--	--	--	Able to identify equipment as well as its components.
<b><u>Equipment Use</u></b> Sensory skills to <i>describe</i> the use of the equipment for the lab work.	Never describes the use of equipment.	Rarely able to describe the use of equipment.	Occasionally describe the use of equipment.	Often able to describe the use of equipment.	Frequently able to describe the use of equipment.
<b><u>Procedural Skills</u></b> <i>Displays</i> skills to act upon sequence of steps in lab work.	Not able to either learn or perform lab work procedure.	Able to slightly understand lab work procedure and perform lab work.	Able to somewhat understand lab work procedure and perform lab work.	Able to moderately understand lab work procedure and perform lab work.	Able to fully understand lab work procedure and perform lab work.
<b><u>Response</u></b> Ability to <i>imitate</i> the lab work on his/her own.	Not able to imitate the lab work.	Able to slightly imitate the lab work.	Able to somewhat imitate the lab work.	Able to moderately imitate the lab work.	Able to fully imitate the lab work.
<b><u>Observation's Use</u></b> <i>Displays</i> skills to perform related mathematical calculations using the observations from lab work.	Not able to use lab work observations into mathematical calculations.	Able to slightly use lab work observations into mathematical calculations.	Able to somewhat use lab work observations into mathematical calculations.	Able to moderately use lab work observations into mathematical calculations.	Able to fully use lab work observations into mathematical calculations.
<b><u>Safety Adherence</u></b> Adherence to <i>safety</i> procedures.	Doesn't adhere to safety procedures.	Slightly adheres to safety procedures.	Somewhat adheres to safety procedures.	Moderately adheres to safety procedures.	Fully adheres to safety procedures.
<b><u>Equipment Handling</u></b> <i>Equipment care</i> during the use.	Doesn't handle equipment with required care.	Rarely handles equipment with required care.	Occasionally handles equipment with required care.	Often handles equipment with required care.	Handles equipment with required care.
<b><u>Group Work</u></b> Contributes in a group based lab work.	Never participates.	Rarely participates.	Occasionally participates and contributes.	Often participates and contributes.	Frequently participates and contributes.

# Software Use Rubric



Course Code and Title: \_\_\_\_\_

Laboratory Session No. \_\_\_\_\_ Date: \_\_\_\_\_

Software Use Rubric					
Criterion	Level of Attainment				
	Below Average (1)	Average (2)	Good (3)	Very Good (4)	Excellent (5)
<b>Identification of software menu (syntax, components, commands, tools, layout etc.).</b>	Can't identify software menus.	Rarely identifies software menus.	Occasionally identifies software menus.	Able to identify software menus.	Perfectly able to identify software menus.
<b>Skills to use software (schematic, syntax, commands, tools, layout) efficiently.</b>	Can't use software efficiently.	Rarely uses software efficiently.	Occasionally uses software efficiently.	Often uses software efficiently.	Efficiently uses software (syntax, commands, tools, layout)
<b>Adherence to safety procedures and handling of equipment (computing unit, peripheral devices, and other equipment in lab).</b>	Doesn't handle equipment with required care and safety.	Rarely handles equipment with required care and safety.	Occasionally handles equipment with required care and safety.	Often handles equipment with required care and safety.	Handles equipment with required care and safety.
<b>Ability to troubleshoot software errors (detection and debugging).</b>	Not able to troubleshoot the errors	Rarely able to troubleshoot the errors	Occasionally able to troubleshoot the errors	Often able to troubleshoot the errors	Fully able to troubleshoot the errors
<b>Analysis and interpretation of results/outputs.</b>	Not able to analyze and interpret results/outputs.	Rarely able to perform the analysis and interpretation.	Occasionally able to perform the analysis and interpretation.	Often able to perform the analysis and interpretation.	Perfectly able to perform the analysis and interpretation.

Weighted CLO (Score)	
Remarks	
Instructor's Signature with Date	

Affective Domain Assessment Rubric (A3)

PLO 10 Communication – Rubric for Affective Domain Assessment (A-3)					
Level of Attainment					
Criterion	0	1	2	3	4
<u>Acknowledges</u> importance of effective and persuasive communication to technical and non-technical audiences.	Never acknowledges the importance of effective and persuasive communication to technical and non-technical audiences.	Rarely acknowledges the importance of effective and persuasive communication to technical and non-technical audiences.	Sometimes acknowledges the importance of effective and persuasive communication to technical and non-technical audiences.	Often acknowledges the importance of effective and persuasive communication to technical and non-technical audiences.	Always acknowledges the importance of effective and persuasive communication to technical and non-technical audiences.
<u>Practice</u> effective and persuasive communication to technical and non-technical audiences.	Never practices effective and persuasive communication to technical and non-technical audiences.	Rarely practices effective and persuasive communication to technical and non-technical audiences.	Sometimes practices effective and persuasive communication to technical and non-technical audiences.	Often practices effective and persuasive communication to technical and non-technical audiences.	Always practices effective and persuasive communication to technical and non-technical audiences.
<u>Value</u> effective and persuasive communication to technical and non-technical audiences.	Never values effective and persuasive communication to technical and non-technical audiences.	Rarely values effective and persuasive communication to technical and non-technical audiences.	Sometimes values effective and persuasive communication to technical and non-technical audiences.	Often values effective and persuasive communication to technical and non-technical audiences.	Always values effective and persuasive communication to technical and non-technical audiences.

Total Score = \_\_\_\_\_

Weighted Score (%) = \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

**NED University of Engineering & Technology**  
**Department of Electronic Engineering**  
 EL-401 Final Year Design Project

**Grading of FYDP Proposal (7<sup>th</sup>/Fall Semester) (Weightage - 6%)**

Project ID: \_\_\_\_\_

Project Title: \_\_\_\_\_

S. No	Student Name	Seat No.	I Problem Identification and Objectives (3)	II Relevance to SDGs (3)	III Proposed Methodology (3)	IV Work Plan (3)	Weighted Average Score (12)
			PLO-2 (%)	PLO-7 (%)	PLO-3 (%)	PLO-11 (%)	
1							
2							
3							
4							

Use Rubric FYDP-OBE-01 for each student.

Average percentage score from the rubrics filled by supervisor and examiner shall be placed in the above table.

*Weighted Average Score = [PLO-2 (%) \* 3 + PLO-7 (%) \* 3 + PLO-3 (%) \* 3 + PLO-11 (%) \* 3] / 100*

\_\_\_\_\_  
 Head of FYDP Steering Committee

# Assessment Frequency of CLO (No. of Attempts)

- A CLO mapped on cognitive domain must be assessed at least three times during the semester on the prescribed taxonomy level. It shall compulsory include final exam as one attempt.
- A CLO mapped on psychomotor domain must be assessed at least three times during the semester. Ideally all but at least 50% labs should be assessed on rubrics.
- A CLO mapped on affective domain must be assessed at least two times during the semester. Affective domain can't be judged in final theory exam.

# KPI for CLO Attainment

For CLO Attainment the student must obtain at least 50% average percentage score from all the attempts

**CLO 1 Attainment Chart of Basic Electrical Engineering**

Roll No.	Test 1	Percentage of scores in Test 1	Test 2	Percentage of scores in Test 2	Test 3	Percentage of scores in Test 3	Average of percentage scores	CLO Attained/ Unattained
	Max Marks=10		Max Marks=05		Max Marks=10			
EL-001	5	50%	1	20%	7	70%	47%	Unattained
EL-002	6	60%	3	60%	6	60%	60%	Attained
EL-003	4	40%	4	80%	4	40%	53%	Attained
EL-004	3	30%	5	100%	8	80%	70%	Attained
EL-005	2	20%	2	40%	7	70%	43%	Unattained
EL-006	6	60%	2	40%	9	90%	63%	Attained



# CLOs Attainment of the Course

CLO Attainment Chart EE-120 Basic Electrical Engineering			
Roll No.	CLO1	CLO2	CLO3
EL-001	47%	50%	62%
EL-002	60%	90%	30%
EL-003	53%	95%	80%
EL-004	70%	50%	30%
EL-005	43%	80%	26%
EL-006	63%	70%	29%

## COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	<b>Discuss</b> principles of electrical circuits.	<b>C2</b>	<b>PLO-1</b>
2	<b>Solve</b> electrical circuits using relevant laws & theorem.	<b>C3</b>	<b>PLO-2</b>
3	<b>Practice</b> of operating equipment/tools to understand principles of electrical circuits under supervision.	<b>P3</b>	<b>PLO-1</b>

# Corrective Action for unattained CLO

- Warning letter is issued to the student
- Student counselling

# PLO Attainment through one course

- Percentage CLO score in a course will be the percentage PLO score linked with that CLO.
- If a PLO is mapped to more than one CLOs in a single course then the scores of the linked CLOs shall be averaged to give one score for that PLO.

Roll No.	CLO1	CLO2	CLO3
EL-001	47%	50%	62%
EL-002	60%	90%	30%
EL-003	53%	95%	80%
EL-004	70%	50%	30%
EL-005	43%	80%	26%
EL-006	63%	70%	29%

CLO1 and CLO 3 of EE-120 are linked to PLO1, so their average percentage score will be the one score for PLO 1.

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	<b>Discuss</b> principles of electrical circuits.	<b>C2</b>	<b>PLO-1</b>
2	<b>Solve</b> electrical circuits using relevant laws & theorem.	<b>C3</b>	<b>PLO-2</b>
3	<b>Practice</b> of operating equipment/tools to understand principles of electrical circuits under supervision.	<b>P3</b>	<b>PLO-1</b>

# PLO Attainment through one course (Continued.....)

**COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME**

Sr. No.	CLOs	Taxonomy level	Programme learning outcome (PLO)
At the end of the course, the student will be able to:			
1	Discuss principles of electrical circuits.	C2	PLO-1
2	Solve electrical circuits using relevant laws & theorem.	C3	PLO-2
3	Practice of operating equipment/tools to understand principles of electrical circuits under supervision.	P3	PLO-1

**CLO Attainment Chart EE-120 Basic Electrical Engineering**

Roll No.	CLO1	CLO2	CLO3
EL-001	47%	50%	62%
EL-002	60%	90%	30%
EL-003	53%	95%	80%
EL-004	70%	50%	30%
EL-005	43%	80%	26%
EL-006	63%	70%	29%

CLO1 linked with PLO1

CLO2 linked with PLO2

CLO3 linked with PLO1

**PLO Attainment Chart EE-120 Basic Electrical Engineering**

Roll No.	PLO1	PLO1 Attained/ Unattained	PLO2	PLO2 Attained/ Unattained
EL-001	54%	Attained	50%	Attained
EL-002	45%	Unattained	90%	Attained
EL-003	67%	Attained	95%	Attained
EL-004	50%	Attained	50%	Attained
EL-005	35%	Unattained	80%	Attained
EL-006	46%	Unattained	70%	Attained

# Corrective Action for unattained PLO

- Warning through the progressive PLO attainment sheet (shown below)
- Student counselling (by advising either repeat the course(s) or score very good in upcoming courses mapped on the same PLOs).

NED University of Engineering & Technology Department of Electronics Engineering 2022 OBE PLO Assessment Sheet EL OBE Framework													
No.	Roll No.	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
1	EL-001	90.21051	91.18887	93.33334	50	87.5	87.77777	#NUM!	#NUM!	100	81.125	#NUM!	91.11111
2	EL-002	76.8381	79.75608	88.33334	43.75	82.5	90.27777	#NUM!	#NUM!	100	79.67361	#NUM!	89.25925
3	EL-003	77.09418	83.88213	66.66666	45.625	71.875	76.94444	#NUM!	#NUM!	64	61.52778	#NUM!	84.44444
4	EL-004	89.62674	92.9417	95	48.125	79.375	88.33334	#NUM!	#NUM!	96	88.29167	#NUM!	82.59259
5	EL-005	77.46745	76.85825	91.66666	44.375	77.5	85.83334	#NUM!	#NUM!	60	76.67361	#NUM!	85.92593
6	EL-006	74.64193	78.5033	91.66666	38.125	80	87.77777	#NUM!	#NUM!	68	83.97916	#NUM!	83.14815

# Final PLO Attainment

- For final PLO attainment at the time of graduation, each PLO must be attained in at least 50% of the respective mapped courses, with an average score of least 50%. This score shall be reflected in PLO attainment sheet.
- PLO Attainment sheet is ONLY issued to the students upon graduation.

# Final PLO Attainment (Continued....)

**PLO 1 Assessed in Six (06) Courses during four years of Electronic Engineering Program**

Roll No.	PLO 1 linked through CLOs assessed in BEE (EE-120)	PLO 1 linked through CLO assessed in DIC (MT-171)	PLO 1 linked through CLOs assessed in APH (PH-112)	PLO 1 linked through CLO assessed in BEL (EL-106)	PLO 1 linked through CLO assessed in BME (ME-110)	PLO 1 linked through CLOs assessed in ACE (CY-110)	No. of courses in which PLO 1 has Attained	Has PLO Attained in 50% courses (PLO Attained in 03 courses)	Average Percentage PLO Attainment	PLO Attained/ Unattained
EL-001	54%	63%	70%	40%	45%	60%	4	Yes	55%	Attained
EL-002	45%	60%	50%	50%	30%	55%	4	Yes	48%	Unattained
EL-003	67%	26%	50%	10%	70%	75%	4	Yes	50%	Unattained
EL-004	50%	50%	60%	70%	10%	50%	5	Yes	48%	Unattained
EL-005	35%	49%	48%	98%	95%	95%	3	Yes	70%	Attained
EL-006	46%	100%	100%	48%	48%	48%	2	No	65%	Unattained

**Roll Number 2, 3, 4 and 6 haven't Attained PLO 1 during their 4 years degree program.**

**NED University of Engineering and Technology**  
**Bachelors of Engineering (\_\_\_\_\_)**

**Outcome Based Education Attainment Sheet**

Name: \_\_\_\_\_  
**Father's Name** \_\_\_\_\_  
 Seat No.: \_\_\_\_\_  
 Batch: \_\_\_\_\_  
 Enrollment No.: \_\_\_\_\_  
 Date of Birth: \_\_\_\_\_  
 CNIC No./Passport No.: \_\_\_\_\_

Admitted in: \_\_\_\_\_  
 Result Declaration: \_\_\_\_\_  
 Mode of Study: \_\_\_\_\_  
 Previous Degree: \_\_\_\_\_  
 Degree Status: \_\_\_\_\_  
 Course Exempted / Transferred  
 from University: \_\_\_\_\_

Semester	Course Code	Course Title	Program Learning Outcomes (PLOs)											
			01	02	03	04	05	06	07	08	09	10	11	12
1														
2														
3														
4														
5														
6														
7														
8														
<b>Aggregate PLO Score:</b>														
<b>PLO Attainment Status (Pass / Fail):</b>														



# Students' Facilitators

## Class Advisors

- First Year Class Advisor
- Second Year Class Advisor
- Third Year Class Advisor
- Final Year Class Advisor

## Counsellors

- Counsellors are assigned to each batch and each section

## FYDP Coordinator

## Internship Coordinator

## Survey Forms Coordinator