



OUTCOME BASED EDUCATION

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OUTLINE

- Why OBE
- Vision
- Mission
- Program Educational Objectives (PEO)
- Program Learning Outcomes (PLO)
- Course Learning Outcomes (CLO)

WHY OBE

- Role of Pakistan Engineering Council
- Washington Accord
- Jobs and other opportunities for the students
- System based on outcomes
- Graduate attributes

Program Educational Objectives

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"

VISSION OF TEXTILE ENGINEERING PROGRAM

“to produce textile engineers known for their technical excellence, leadership qualities & ethical values, so they may contribute profoundly to the society and to the profession”

MISSION OF TEXTILE ENGINEERING PROGRAM

“to provide comprehensive knowledge in the textile engineering discipline through a well-designed curricula while teaching them professional and ethical values so these graduates will be capable of fulfilling the needs of the industry and the society ”

FORMULATION OF PEOs

- The PEO statements were initially formulated by the OBE Committee of the department
- These statements were discussed in a faculty meeting and some suggestions were incorporated
- The PEO statements were presented in the meeting of Industry Advisory Board and they were approved after some discussions
- These statements were finally approved by the Board of Studies of the department

INDUSTRY ADVISORY BOARD

| INTERNAL MEMBERS | EXTERNAL MEMBERS |
|------------------------------------|--|
| Dr. Salma Farooq (Chairperson) | Mr. Khaleeq-UR-Rahman President Feroze 1888 Mills |
| Dr. Sheraz Hussain Siddique | Mr. Ajmal Afzal Director Amna Industries |
| Dr. Saira Faisal | Mr. Assad Soorty Director Soorty Enterprises |
| Dr. Fareha Asim (Area Coordinator) | Dr. Arshad Mahmood Head of Business Development Archroma Pakistan |
| | Mr. Syed Umair Ahmed Chief Research and Development Officer Midas Safety |

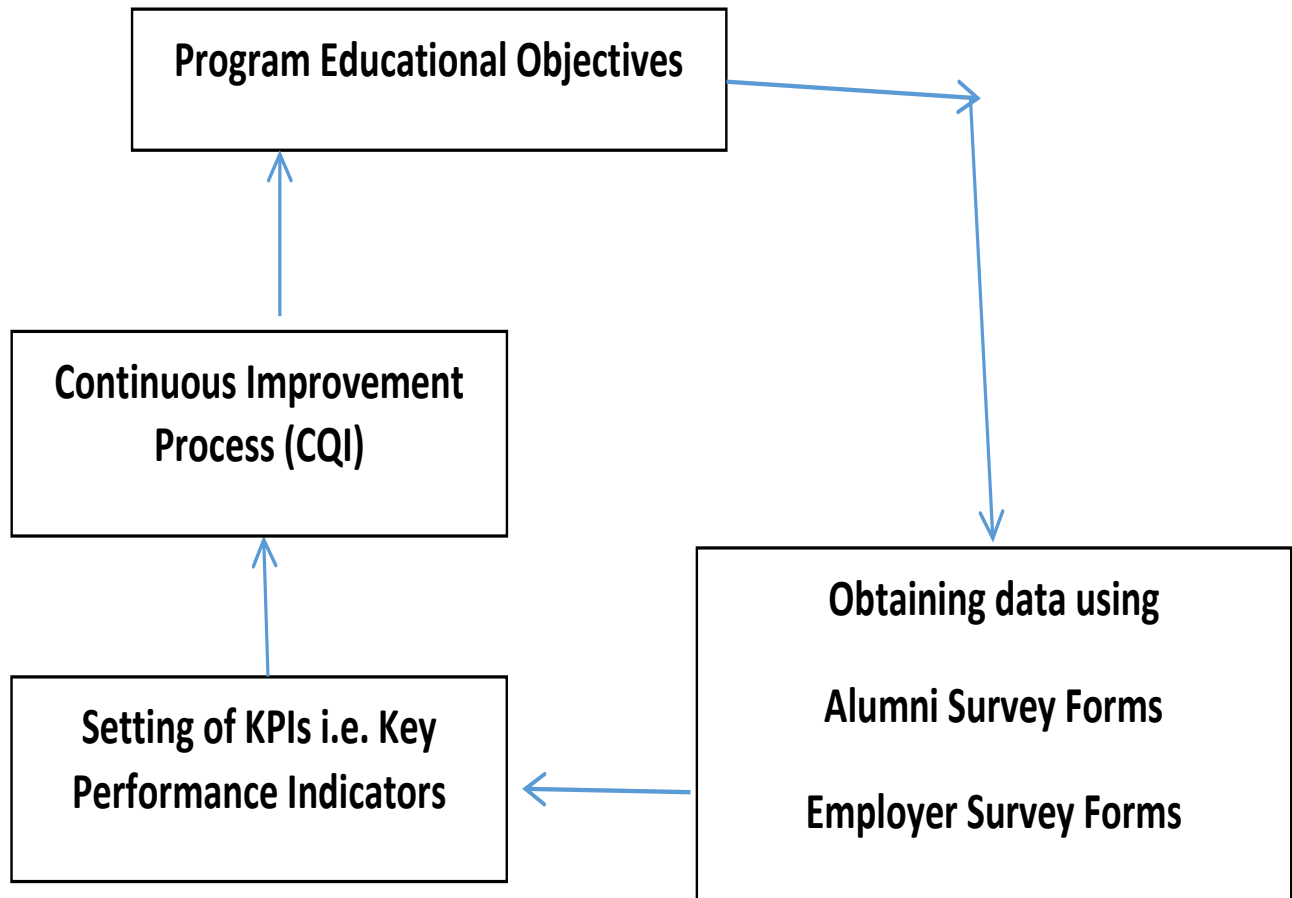
PEO Statements

- *Utilizing the sound technical knowledge in Textile engineering, mathematics and management that will lead to success in a broad range of career opportunities, and graduate education.*
- *Ability to successfully apply critical thinking to solve contemporary issues and engineering challenges in their professional life.*
- *Effective written, verbal and visual communication skills to disseminate ideas to the team members, customers and interdisciplinary personnels.*
- *Awareness of ethical, legal and professional obligations so they as may contribute for the sustainable development of the environment and society*
- *Lifelong learning and continuous self-improvement by pursuing higher education and professional developmental courses*

MAPPING OF PEOs WITH PROGRAM MISSION

| S. No | PEOs | Textile Engineering Program Mission | | |
|-------|--|-------------------------------------|---------------------|----------------------|
| | | Knowledge | Professional values | Industry and society |
| 1 | Sound technical knowledge | X | | |
| 2 | Apply knowledge to solve problems | X | | |
| 3 | Effective communication | | X | |
| 4 | Sustainable development of environment and society | | | X |
| 5 | Lifelong learning & Professional Development | | X | X |

ATTAINMENT OF PEOs



KEY PERFORMANCE INDICATORS FOR PEOs

| PEOs | KPIs |
|----------------------|--|
| PEO 1 | 50% students should get employment with in six months of graduation |
| PEO 2, PEO 3 & PEO 4 | <p>The questions of alumni and employer survey forms are related with PEO statements</p> <p>On individual level KPI is achieved if the response of each question is equals to or more than 60%</p> <p>On cohort level KPI is achieved if 50% individuals have given response, which is equal to or more than 60% on the survey forms</p> |
| PEO 5 | 10% of the total student per academic year should enroll for Master's and attend professional courses for their professional development |

CONTINUOUS QUALITY IMPROVEMENT FOR PEOs

- When the data is obtained after four years, if the KPIs are met overwhelmingly then the KPIs will be reset
- If the KPIs are not met the following actions will be taken
 - Review of assessment tools
 - Review of curriculum
 - Review of PEO statements

PROGRAM LEARNING OUTCOMES

GRADUATE ATTRIBUTES

- **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using principles of mathematics, natural sciences and engineering sciences.
- **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

GRADUATE ATTRIBUTES

- **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.
- **Modern Tool Usage:** An ability to 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.
- **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the responsibilities relevant to professional engineering practice and solution to complex engineering problems.

GRADUATE ATTRIBUTES

- **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.
- **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

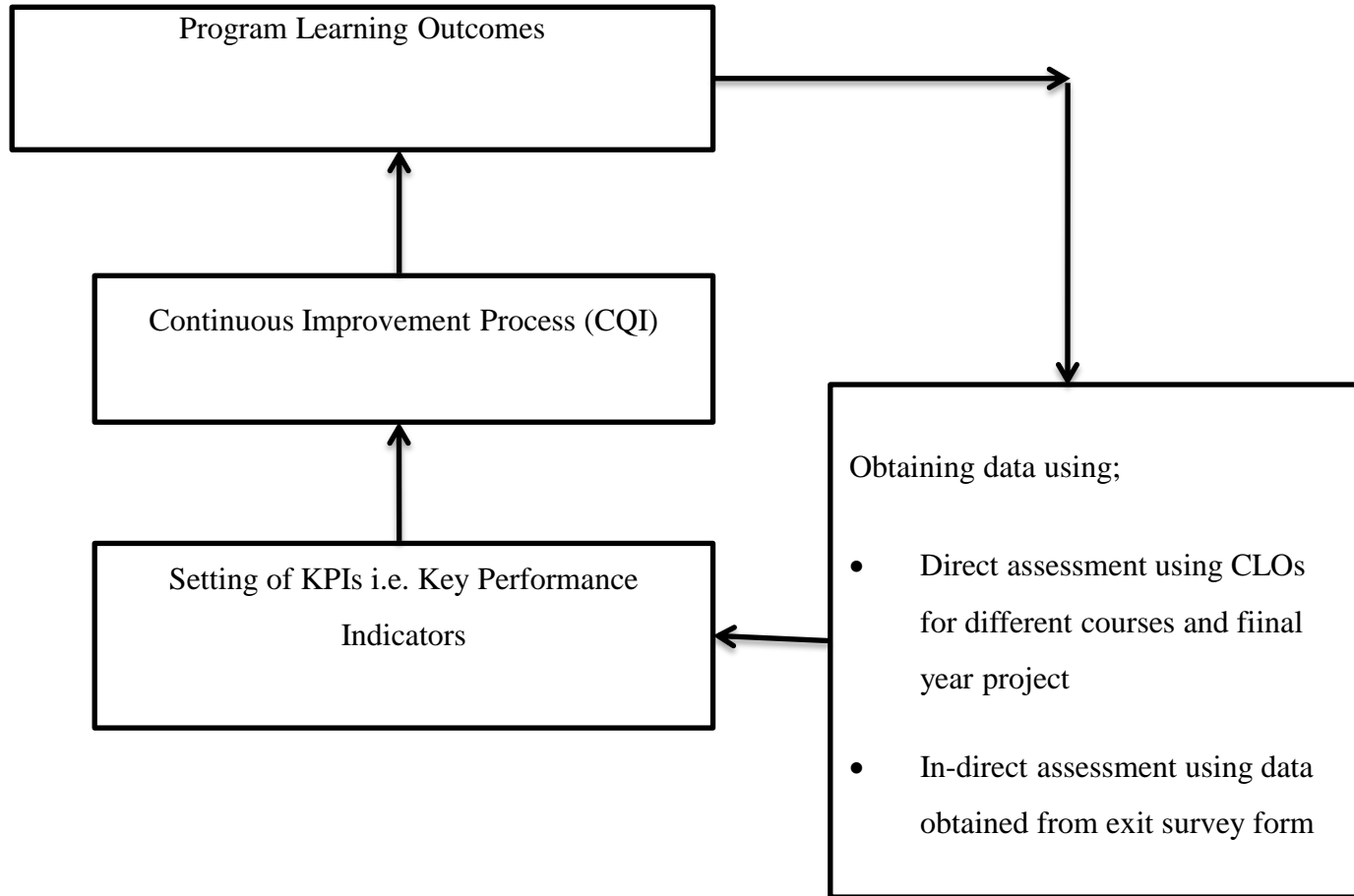
GRADUATE ATTRIBUTES

- **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.
- **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.
- **Lifelong Learning:** Ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

MAPPING OF PEOs TO PLOs

| PEC Graduate Attributes (as defined in Sec 3.2.2) | | | | | |
|--|-------|-------|-------|-------|-------|
| | PEO_1 | PEO_2 | PEO_3 | PEO_4 | PEO_5 |
| Engineering Knowledge | ✓ | | | | |
| Problem Analysis | | ✓ | | | |
| Design/Development of Solutions | | ✓ | | | |
| Investigation | | ✓ | | | |
| Modern Tool Usage | ✓ | | | | |
| The Engineer and Society | | | | ✓ | |
| Environment and Sustainability | | | | ✓ | |
| Ethics | | | | ✓ | |
| Individual and Team Work | | | ✓ | | |
| Communication | | | ✓ | | |
| Project Management | ✓ | | | | |
| Lifelong Learning | ✓ | | | | ✓ |

ATTAINMENT OF PLOs



ATTAINMENT OF PLOs

- The PLOs are attained by direct methods i.e. assessment of courses and final year projects
- For this purpose all the courses are mapped with respective PLOs as shown in Annexure D
- The PLOs could also be attained by indirect methods i.e. exit survey of the graduating students

KEY PERFORMANCE INDICATORS FOR PLOs

| PLOs | KPIs at individual level | KPIs at cohort level |
|-----------------------------|--|--|
| Direct assessment | 50% PLO score for all the courses is achieved by the students at individual level | At least 50 % students should achieve more than and equal to 50% PLO score |
| In-direct assessment | The exit survey form is designed on a scale of 1 to 5. The KPIs is set at 60% that the students should achieve at individual level | On cohort level KPI is achieved if 50% individuals have given response, which is equal to or more than 60% on the survey forms |

CONTINUOUS QUALITY IMPROVEMENT FOR PLOs

- When the data is obtained after every semester, if the KPIs are met overwhelmingly then the KPIs will be reset
- If the KPIs are not met the following actions will be taken
 - Review of CLO assessment methods
 - Review of CLO-PLO mapping
 - Review of curriculum

CONTINUOUS QUALITY IMPROVEMENT FOR PLOs

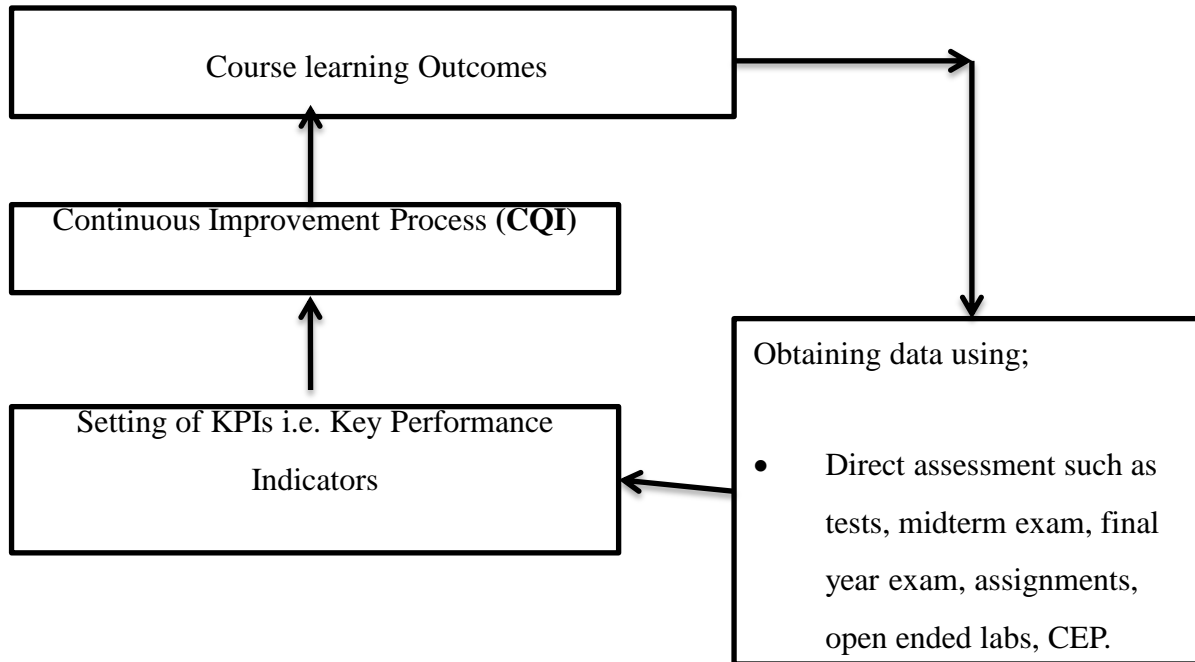
PLO attainment for each batch is evaluated on a semester basis. If a student does not achieve a PLO on the individual level a warning letter will be issued to him or her from the department chair

COURSE LEARNING OUTCOME

COURSE LEARNING OUTCOMES CLOs

- The course learning outcomes are defined for the courses which are mapped with PLOs in Annexure D
- The course learning outcomes are related with the Bloom Taxonomy level i.e. Cognitive, Psychomotor and Affective domains
- The relationship is shown at Annexure D1

ATTAINMENT OF CLOs



ATTAINMENT OF CLOs

- The course learning outcomes are assessed by using direct assessment methods such as:
- Test
- Mid-term exam
- Final exam
- Assignment
- Quiz
- Complex engineering problem
- Open ended labs

KEY PERFORMANCE INDICATORS FOR CLOs

| CLOs | KPIs at individual level | KPIs at cohort level |
|---|---|--|
| <p>Direct assessment of each course i.e. test, mid term exam, final exam, assignment, complex engineering problem and open ended labs</p> | <p>CLOs will be related with any of the assessment methods. 50% marks should be obtained at individual level for each CLO</p> | <p>At least 50 % students should achieve more than 50% score in each CLO to attain the KPI at cohort level</p> |

CONTINUOUS QUALITY IMPROVEMENT FOR CLOs

- When the data is obtained after every semester, if the KPIs are met overwhelmingly then the KPIs will be reset
- If the KPIs are not met the following actions will be taken
- Review of student course feedback
- Review of assessment methodologies
- Course content review
- Review of course learning outcome statement
- Faculty training

THANK YOU