

Minutes of the 21st
Meeting of the Board of
Studies Faculty of
Engineering Sciences
held on
15th July and 16th July, 2020
through MS Team



Bahria University Islamabad

Minutes of the 21st FBOS – ES

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Minutes of the 21st Meeting of Faculty Board of Studies Engineering Sciences held on 15th & 16th July, 2020 through MS Team

Attendance:

BUIC

Snr. Prof. Dr. Atif Raza Jafri	Dean ES	Chair
Snr. Assoc. Prof. Dr. Awais Majeed	HoD(SE)	Member
Assoc. Prof. Dr. Khalid Javed	HoD(CE)	Member
Snr. Asst. Prof. Dr. Junaid Imtiaz	HoD(EE)	Member
Snr. Asst. Prof. Adeel M. Syed	OBE Software In charge	Member
Asst. Prof. Ammar Ajmal	PEC Coordinator CE(BUIC)	Member
Asst. Prof. Faheem Haroon	Faculty Coordinator	Member
Asst. Prof. M. Hassan Danish Khan	Manager Accreditation Cell	Member
Engr. Kamran Saeed	Asst. Manager Accreditation Cell	Member

BUKC

Snr. Assoc. Prof. Dr. Sohaib Ahmad	Assoc Dean ES/HoD SE	Member
Snr. Asst. Prof. Dr. Najam M. Amin	HoD(EE)	Member
Assoc. Prof. Dr. Rizwan Iqbal	HoD(CE)	Member
Snr. Asst Prof. Dr. Abdul Attayyab Khan	PEC Coordinator(EE)	Member

Proceedings

Preliminaries

FBoS-ES meeting took place on two days; in first session, with the quorum complete, the proceedings commenced at 1030 hrs, with recitation from the Holy Quran on 15th July, 2020.

The second session of FBoS took place on 16th July, 2020, with the quorum complete; the proceedings commenced at 1130 hrs.

In his opening remarks, the Chair stressed the importance for participation in the proceedings while staying focused on the point under deliberation.

New Items:

Item 2101: KPI Mapping for PEOs/PLOs/CLOs

Sponsor: Dean ES

Referral Authority:

Summary of the Case

CQI Process is essential for OBE based re-accreditation of all engineering programs. Keeping in view the changes approved in 35th ACM, KPI Mappings for PEOs/PLOs/CLOs are required to be reviewed for all engineering programs.

Discussion

The sponsor presented the agenda point and detailed discussion was carried out on the KPI Mapping of all engineering programs. The house suggested some changes and recommendations regarding the measurement tools and thresholds.

Decision 2101

For electrical engineering program, the KPI Mappings remained unchanged. The KPI Mapping was revised for the computer engineering program based on the new PEO to PLO Mapping. For the software engineering program, the KPI Mapping has been revised based on the new PEOs. The approved KPI Mapping of all engineering programs are attached at [appendage 2101](#). The Accreditation cell will forward these KPI Mapping to software team for integration in the OBEBU platform.

Item 2102: Survey Forms for PEO attainment

Sponsor: Dean ES

Referral Authority:

Summary of the Case

The attainment of PEOs is calculated employing both direct and indirect assessment tools. At present, the following indirect assessment tools (survey forms) are being filled manually. There is a need to integrate these survey forms in the OBEBU software for performing the PEO analysis swiftly:

- i. Alumni Feedback Survey Form
- ii. Employer Survey Form

Discussion

The sponsor presented the agenda point which was deliberated by house in length. Manager accreditation cell explained existing and updated survey forms. The house further suggested some changes in survey forms of each department.

Decision 2102

The approved survey forms of all engineering programs are attached at [appendage 2102](#). The Accreditation cell will forward these survey forms to the software team for integration in the OBEBU platform.

Item 2103: Survey Forms for PLO attainment

Sponsor: Dean ES

Referral Authority: Accreditation Cell

Summary of the Case

The attainment of PLOs is calculated employing both direct and indirect assessment tools. At present, the following indirect assessment tools (survey forms) are being filled manually. There is a need to integrate these survey forms in the OBEBU software for performing the PLO analysis swiftly:

- i. Exit Survey Form
- ii. CSP Survey Form
- iii. Internship Survey Form

Discussion

The sponsor presented the agenda point. Manager accreditation cell explained existing and updated survey forms. After detailed discussion and deliberation the house suggested few changes which were incorporated in the existing forms.

Decision 2103

The approved survey forms of all engineering programs are attached at [appendage 2103](#). The Accreditation cell will forward these survey forms to the software team for integration in the OBEBU platform.

Item 2104: Survey Forms for CLO attainment

Sponsor: Dean ES

Referral Authority:

Summary of the Case

Following survey forms were a part of the OBE Framework presented in 31st ACM. These forms are generally required for the CLOs analysis, but are not essential:

- i. Student Evaluation Form
- ii. Teacher Evaluation Form

Discussion

The sponsor presented the agenda point. The agenda point was deliberated in length by the house. The existing and proposed survey forms were discussed in front of the house. The HODs of computer and software engineering programs opposed the proposed forms and were in favour of the existing feedback mechanism that collects the teacher feedback from the CAR while the student feedback is gathered from the existing QA forms.

Decision 2104

Teacher feedback will be part of the Course Assessment Report whereas student feedback can be taken either through a departmental form or through mapping the input from already existing form in CMS system.

Item 2105: Auto-generated CAR and PAR through OBEBU Software

Sponsor: Dean ES

Referral Authority:

Summary of the Case

The Course Assessment Report (CAR) and Program Assessment Report (PAR) are an essential component of the CQI process. At present, the OBE data of all engineering programs is being maintained in the OBEBU software and only CAR is being generated. There is a need to device a mechanism to auto-generate both CAR and PAR through the OBEBU software.

Discussion:

The sponsor presented the agenda point during second session of FBoS. The proposed modular course assessment and program assessment reports were presented in front of the house. After discussing each module of CAR and PAR in detail the house agreed on a comprehensive structure of CAR and PAR for all engineering programs. The house further recommended to adopt these modules as per the OBE requirement of the engineering program or as deemed necessary.

Decision 2105:

The approved structure of CAR and PAR are attached at [appendage 2105](#). The HODs of all engineering programs are to discuss the proposed modular reports in their respective DBOSSs and forward the approved assessment reports to the Accreditation Cell for onward submission to OBEBU software team.

Item 2106: Finalization of Requirements for OBEBU software & its integration with CMS/LMS

Sponsor: Dean ES

Referral Authority:

Summary of the Case

Following tasks shall be done on priority basis to cater upcoming challenges to finalize OBE software and its integration with CMS/LMS:

- i. Linkage with existing CMS/LMS
- ii. Compilation of information related to PEC

Discussion

The sponsor presented the agenda point. The house suggested that linkage of the OBE Software with existing CMS /LMS is essential to avoid duplication of data. The house also suggested that both direct and indirect assessment tools (survey forms) should be integrated in OBEBU software on priority basis. Moreover, based on the input from the HODs of all engineering programs a requirement sheet for the OBEBU software was presented and was approved by the house.

Decision 2106

The approved requirements for the OBEBU software are attached at [appendage 2106](#). The OBEBU software team will work towards the completion of these requirements and will present the progress in the next FBoS.

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Additional Items:

Item 2107: CQI Process in the OBE Implementation Model for Electrical Engineering Program (BUIC and BUKC)

Sponsor: HOD EE

Referral Authority:

Summary of the Case

The electrical engineering departments at BUIC and BUKC are implementing the Outcome Based Education (OBE) model for their undergraduate programs. The OBE framework presented in 31st ACM consists of the processes related to the assessment and analysis of PEOs, PLOs and CLOs. Based on general OBE framework, HoDs EE BUIC/BUKC have detailed their implementation plan in their departments.

Discussion

The sponsor presented the agenda point. The CQI process details related to the assessments of PEOs, PLOs and CLOs were presented in front of the house. The house found the proposed plan compliant with the OBE framework presented in the 31st ACM.

Decision 2107

The presented OBE implementation model for the electrical engineering programs of BUIC and BUKC is attached at [appendage 2107](#) for information to other departments.

Closing of the Meeting

There being no further points, the Chair brought the meeting to close, thanking the participants for their wholehearted participation in both sessions.

Prof. Dr Atif Raza Jafri
Dean (ES), Head FBoS
September, 2020

Distribution:

BUHQ:	Rector, Pro-Rector, Registrar DAA
BUIC:	DG BUIC, DIC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)
BUKC:	DG BUKC, DKC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)

Appendages:

Appendage 2101

KPI Mapping

Computer Engineering (BUIC & BUKC)

For PEOs:

Program Educational Objectives (PEOs)		Key Performance Indicator (KPI's)	Assessment Tools	Threshold (Optional)
PEO 1	Attain an ability to identify and solve challenging problems in their professions by applying theory, principles and modern tools learnt during degree program.	A & B	A. Alumni Feedback B. Employer Feedback	> 50% (A) > 50% (B)
PEO 2	Demonstrate effective communication as an individual or team player with strong managerial and entrepreneurial skills.	A&B&C&D	A. Alumni Feedback B. Alumni Employment Status C. Alumni Designation Field D. Employer Feedback	> 50% (A) > 5% (B) > 10% (C) > 50% (D)
PEO 3	Maintain highest ethical and professional standards in pursuing their careers.	A & B	A. Alumni Feedback B. Employer Feedback	> 30% (A) > 70% (B)
PEO 4	Engage in life-long learning to continually polish their professional capabilities for their personal growth and the betterment of society.	A&B&C&D	A. Higher Education field in Alumni Feedback B. Membership of professional engineering bodies in Alumni Feedback C. Working for the betterment of Society/Welfare in Alumni Feedback D. Employer Feedback	> 10% (A) > 80% (B) > 10% (C) > 60% (D)

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For PLOs:

Program Learning Outcomes (PLOs)	Assessment Tools	Key Performance Indicator (KPI's)	Assessment Time
Program PLO assessment	A. Exit Survey (Indirect Assessment)	A & B & C A. > 60% B. > 60% C. > 60%	End of degree
	CSP Survey (Indirect Assessment)		
	Internship Feedback (Indirect Assessment)		
Student PLO assessment	(Direct Assessment)	> 60%	At the end of 6th, 7th, and 8th Semesters

For CLOs:

Course Learning Outcome (CLOs)	Assessment Tools	Key Performance Indicator (KPI's)	Assessment Time
Course (and or lab) wise CLO assessment	Course (and or lab) Assessment tools: A. Quizzes B. Assignments C. Projects/CEPs (Optional) D. Exams	> 50%	End of each semester

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Electrical Engineering (BUIC & BUKC)

For PEOs

Program Educational Objectives (PEOs)		Key Performance Indicator (KPI's)	Assessment Tools
PEO 1	To exhibit the expertise in the field of electrical engineering to compete with technical challenges and find the solutions of complex engineering problems.	60% of the employers in the industry are satisfied with the technical competence of EE graduates.	Employer Survey Question C1
		5% of the graduates have presented their work at technical forums such as conference, journal, symposium, technical.	Alumni Survey Question D
PEO 2	To be skillful employable graduates in different domains of design, development, operation and maintenance, as well as explore opportunities for entrepreneurship.	50% of the graduates are gainfully employed in the electrical engineering related industry.	Employer Survey Question C2
		5% of the graduates have started their own business/start-ups or employed in other fields.	Alumni Survey Question B
PEO 3	To pursue professional growth by taking up higher studies, learn technologies, develop proficiency in the usage of new tools.	15% of graduates have secured admission in MS or PhD after graduation either within Pakistan or abroad.	Alumni Survey Question C
		20% of the graduates have attended at least one professional development course after graduation.	Alumni Survey Question E
PEO 4	To work in multicultural environment and communities, providing leadership in their domain, and responsive to ethical, moral, and societal issues.	15% of graduates are part of organization that supports communities working for the betterment of society.	Alumni Survey Question F
		5% of graduates have managerial positions in their industry.	Employer Survey Question B

For PLOs

Program Learning Outcome s (PLOs)	Assessment Tools	Assessment share	Assessment Time	Key Performance Indicator (KPI's)
Program PLO assessment	Exit Survey (Indirect Assessment)	10% for all PLOs	End of 8 th semester	All students must attain an average of 60% of total number of relevant courses in 12 PLOs.
	CSP Survey (Indirect Assessment)	10% for PLO (6,7,8,9,10,11,12)	End of 8 th semester	
	Internship Feedback (Indirect Assessment)	10% for all PLOs	End of 8 th semester	
Student PLO assessment	Attainment via course assessments, projects, assignments, etc. (Direct Assessment)	80% for PLOs (1,2,3,4,5) 70% for PLOs (6,7,8,9,10,11,12)	7 th and 8 th semester of final year.	

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For CLOs

Course Learning Outcomes (PLOs)	Assessment Tools	Assessment share	Assessment Time	Key Performance Indicator (KPI's)
CLO assessment	Direct Assessment	90%	On completion of each course	A CLO shall be cleared if a student takes at least 50% marks in that CLO.
CLO assessment	Indirect Assessment	10%	On completion of each course	

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Software Engineering (BUIC & BUKC)

For PEOs:

PEOs	KPIs	PLOs
PEO-1: Graduates should demonstrate competence in applying Software Engineering principles & practices in various phases of software/system development life cycle in their respective professional career.	<p>Employer Survey</p> <p>50% of the employers are satisfied in terms of software engineering skills of the graduates covering SDLC and develop appropriate solutions. (GA1,3)</p> <p>50% of the employers are satisfied in terms of analytical skills of the graduate to analyse and investigate various technical (GA 2, 4)</p> <p>50% of the employers are satisfied in terms of technical competence of the graduates to design and develop computing solutions using contemporary tools and techniques. (GA 5)</p> <p>Alumni Survey</p> <p>50% of graduates are satisfied with the appropriateness of engineering knowledge, design and development skills acquired during their studies to meet their professional needs. (GA 1,3)</p> <p>50% of graduates are satisfied with the analytical and problem solving skills gained during their studies to investigate complex engineering problems to</p>	PLO 1 PLO 2 PLO 3 PLO 4 PLO 5

	<p>come up with effective solutions. (GA 2,4)</p> <p>50% of the graduates are satisfied in terms of appropriateness of curriculum in building technical competence in the usage of contemporary tools and techniques required for software engineering practice. (GA 5)</p>	
PEO-2: Graduates should demonstrate effective team member or leadership skills with strong managerial skills and a sound sense of social responsibility for the sustainable development of society.	<p>Employer Feedback</p> <ol style="list-style-type: none"> 1. 50% of the employers are satisfied with management skills of the graduates and consider them as an effective team member in various capacities. (GA 9,11) 2. 50% of the employers consider that graduates are sensitive to social and environmental impact of their professional engineering practice (GA 6,7). <p>Alumni Feedback</p> <ol style="list-style-type: none"> 1. 50% of the graduates are satisfied with management, leadership and effective team working skills gained through the degree program. (GA 9,11) 2. 50% of the graduates consider that their degree program sensitized them to 	PLO 6 PLO 7 PLO 9 PLO 11

	<p>social and environmental impact of their professional engineering practice (GA 6,7).</p>	
PEO-3: Graduates should demonstrate sustained career development and progression through ethical engineering practices, effective communication skills and continuous learning.	<p><u>Employer Survey</u></p> <p>50% of the employers are satisfied with the ethical conduct of the graduates (GA8).</p> <p>50% of the Employers are satisfied with the communication skills and managerial skills of the graduates necessary for their future career development (GA 10, 11).</p> <p>50% of the Employers are satisfied with the self-learning attitude of the graduates necessary for future growth of individuals and organization (GA 12).</p> <p><u>Alumni Survey</u></p> <p>15% of the graduates have enhanced their skills through postgraduate studies or technical & professional education (GA 12).</p> <p>50% of the graduates are satisfied with the knowledge gained during their studies to practice the engineering profession ethically with sound managerial and communication skills (GA 8, 11, 12)</p>	PLO 8 PLO 10 PLO 11 PLO 12

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For PLOs

Program Learning Outcomes (PLOs)	Assessment Tools	Assessment share	Assessment Time	Key Performance Indicator (KPI's)
Program PLO assessment	Exit Survey (Indirect Assessment)	10% for all PLOs	End of 8 th semester	All students must attain an average of 60% of total number of relevant CLOs in 12 PLOs.
	CSP Survey (Indirect Assessment)	10% for PLO (6,7,8,9,10,11,12)	End of 8 th semester	
	Internship Feedback (Indirect Assessment)	10% for all PLOs	End of 8 th semester	
Student PLO assessment	Attainment via course assessments, projects, assignments, etc. (Direct Assessment)	80% for PLOs (1,2,3,4,5) 70% for PLOs (6,7,8,9,10,11,12)	7 th and 8 th semester of final year.	

For CLOs

Course Learning Outcomes (PLOs)	Assessment Tools	Assessment share	Assessment Time	Key Performance Indicator (KPI's)
CLO assessment	Direct Assessment	100%	On completion of each course	A CLO shall be cleared if a student takes at least 50% marks in that CLO.
CLO assessment	Indirect Assessment	Qualitative analysis	On completion of each course	



Quality Assurance Directorate

Bahria University

Form No.
SE-PEC-L3-01A

Alumni Survey Form – OBE

Department of Software Engineering – BU

(To be filled by Alumni – _____ years after completion of degree)

Introduction

A. Alumni Profile

Name: _____

Email: _____

Year of Graduation: _____

Degree Program: _____

Contact: _____

B. Employment Profile

Current Employment Status

Employed Self-employed Unemployed Continuing Education

Time to get employed after graduation

Less than 3 months Within 6 months More than 6 months More than a year

Employer/ Name of Organization (Optional): _____ Designation (Optional): _____

C. Work Experience

Less than a year 1-2 Year(s) 3-5 Years 6-10 Years Greater than 10 Years

- D. Using the scale provided, please respond to the following questions by indicating the degree to which you agree to the specified statements in this questionnaire.

5: Very strong 4: Strong 3: Moderate 2: Weak 1: Very Weak 0: Not Applicable

PEO 1: Graduates should demonstrate competence in applying Software Engineering principles and practices in various phases of software/system development life cycle in their respective professional careers.

Sno.	Statements	PLOs	5	4	3	2	1	0
1	I am satisfied with the 'Software Engineering Knowledge' that I acquired through the BSE program and deem it appropriate for advancement of my professional career.	PLO-1						
2	I am satisfied with the 'Problem Analysis' skills and knowledge which I acquired through the BSE program and deem it appropriate for advancement of my professional career.	PLO- 2						
3	I am satisfied with the knowledge of Design and Development of Solutions that I gained through the BSE program and deem it appropriate for advancement of my professional career.	PLO- 3						
4	I am satisfied with the Investigation techniques I learned in the BSE program and deem them appropriate for advancement of my professional career.	PLO- 4						
5	I am satisfied with the 'Modern Tools for SE' that I learned in the BSE program and deem it appropriate for advancement of my professional career.	PLO- 5						

PEO 2: Graduates should demonstrate effective team member or leadership skills with strong managerial skills and a sound sense of social responsibility for the sustainable development of society.

Sno.	Statements	PLOs	5	4	3	2	1	0
1	BSE program helped provide awareness of my responsibilities as an Engineer towards the society in the context of social, health & safety, legal and cultural impacts of my practice and technical solutions to complex engineering problems.	PLO 6						
2	BSE program helped me understand the impact of my professional engineering practice and technical solutions towards the betterment and sustainable development of society based on knowledge gained during my studies.	PLO 7						
3	BSE program equipped me with the required skills and exposure to be an effective member of a diverse team to meet my professional and career goals.	PLO 9						
4	BSE program equipped me with necessary management skills to work as a member or team leader to carry out technical projects efficiently.	PLO 11						

PEO 3: Graduates should demonstrate sustained career development and progression through ethical engineering practices, effective communication skills and continuous learning.

Sno.	Statements	PLOs	5	4	3	2	1	0
1	Trough BSE program I gained ample knowledge in terms of ethical values and practices necessary for the professional engineering practices and career growth.	PLO 8						
2	Communication skills acquired during my BSE studies were relevant and useful towards practical practice.	PLO 10						
3	Personal and team management skills necessary for sustained career development were inculcated during my BSE program.	PLO 11						

	4	I have completed multiple training(s)/certification(s)/education (including MS/PhD) since my graduation.	PLO-12																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">PLO1: Engineering knowledge</td> <td style="padding: 2px;">PLO5: Modern Tool usage</td> <td style="padding: 2px;">PLO9: Indiv.& Team work</td> </tr> <tr> <td style="padding: 2px;">PLO2: Problem Analysis</td> <td style="padding: 2px;">PLO6: The Engineer and society</td> <td style="padding: 2px;">PLO10: Communication</td> </tr> <tr> <td style="padding: 2px;">PLO3: Design/development of solution</td> <td style="padding: 2px;">PLO7: Environment &sustainability</td> <td style="padding: 2px;">PLO11: Project Management</td> </tr> <tr> <td style="padding: 2px;">PLO4: Investigation</td> <td style="padding: 2px;">PLO8: Ethics</td> <td style="padding: 2px;">PLO12: Lifelong learning</td> </tr> </table>								PLO1: Engineering knowledge	PLO5: Modern Tool usage	PLO9: Indiv.& Team work	PLO2: Problem Analysis	PLO6: The Engineer and society	PLO10: Communication	PLO3: Design/development of solution	PLO7: Environment &sustainability	PLO11: Project Management	PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning
PLO1: Engineering knowledge	PLO5: Modern Tool usage	PLO9: Indiv.& Team work																	
PLO2: Problem Analysis	PLO6: The Engineer and society	PLO10: Communication																	
PLO3: Design/development of solution	PLO7: Environment &sustainability	PLO11: Project Management																	
PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning																	

E. Evaluation of BU educational experience:

i. Indicate your level of overall satisfaction with your training during degree as it relates to your career:

Very Satisfied Satisfied Neutral Dissatisfied

ii. Based on your experience since graduation, what are the primary strengths of your BU education?

iii. Considering your professional experience since you received your degree, which subject(s), principle(s), item(s), etc. do you feel were missing and wish had been covered while you were a student in engineering?

F. Any Other Remarks/Suggestions:

Signature of Alumni and Date

Signature of Coordinator and Date



Quality Assurance Directorate

Bahria University

Form No.
SE-PEC-L3-01A

Employer Survey Form – OBE

Department of Software Engineering – BU

(To be filled by the Manager/In charge/Supervisor/Team Lead)

Introduction

The Department of Electrical Engineering Internship Program routinely seeks feedback from student interns and their on-site supervisor's so that we can monitor the quality of the program and enhance its benefits for both students and their internship sites.

Kindly fill out the attached student's survey. Your answers will play an immense role in enhancing our internship program. Completion of this survey is required as a part of the internship. Even so, we thank you for your thoughtful input and welcome any comments you might have. If you have any questions about this survey or the internship program, please contact the department.

A. Company Profile

Name: _____

Type (Gov/Priv): _____

Location: _____

Number of Employees: _____

Contact: _____

B. Employee Profile

Name: _____

Email: _____

Year of Graduation: _____

Degree Program: _____

Contact: _____

Designation (Optional): _____

C. Please respond to the following by indicating the most appropriate answer in this questionnaire.

5: Very strong 4: Strong 3: Moderate 2: Weak 1: Very Weak 0: Not Applicable

SNo.	Statements	PEOs	5	4	3	2	1	0
1	We are satisfied with the 'Software-Engineering Knowledge' which the graduate has acquired through the BSE program and deem it appropriate towards advancement of their professional career.	PEO-1						
2	We are satisfied with the 'Problem Analysis' skills and knowledge which the graduate has acquired through the BSE program and deem it appropriate towards advancement of their professional career.							
3	We are satisfied with the 'Knowledge of Design and Development of Solutions' that the graduates gained in							

		the BSE program and deem it appropriate towards advancement of their professional career.						
4		We are satisfied with the 'Investigation Techniques' which the graduates learned in the BSE program and deem it appropriate towards advancement of their professional career.						
5		We are satisfied with the 'Modern Tools for SE' which the graduates learned in the BSE program and deem it appropriate towards advancement of their professional career.						
6		We are satisfied with the social responsibility demonstrated by the graduate in terms of impact of their engineering practice and technical solutions on environment and sustainable development of society.	PEO-2					
7		We are satisfied with the professional conduct of the graduate in terms of fulfilling their responsibilities as an individual or team member in diverse teams.						
8		We are satisfied with the management skills of the graduate to fulfill individual tasks or lead multidisciplinary teams.						
9		We are satisfied with the communication skills of the graduate of the BSE program.	PEO-3					
10		We are satisfied with the ethical conduct of the graduate of the BSE program while working individually as well as part of a team.						
11		We are satisfied with the managerial skills of the graduate of the BSE program.						
12		We are satisfied with the self-learning and personal growth attitude of the graduate through technical trainings, professional development courses and/or postgraduate education.						

Employer Signature and Date



Quality Assurance Directorate

Bahria University

Form No.
EE-PEC-L3-
01A

Alumni Survey Form – OBE

Department of Electrical Engineering – BUIC

Introduction

Dear BU Alumni

We are glad that you have spent your 4 valuable years of Bachelor in Electrical Engineering at Electrical Engineering Department, Bahria University. You will be pleased to know that your alma matter has, in a short period of time, grown to be one of the leading and sought-after universities. We would like to place on record that your co-operation and support has continued in no small measure towards this achievement. To maintain and enhance higher teaching and research practices at Bahria University, the department of Electrical Engineering has enlisted a few program Educational Objectives (PEOs) inline to the Washington Accord's consortium as listed above.

We shall very much appreciate and be thankful if you can spare some of your valuable time to fill up this feedback form and give us your valuable suggestions for further improvement of this quality enhancement process.

A. Alumni Profile

Name: _____

Email: _____

Year of Graduation: _____

Degree Program: BEE

Contact: _____

B. Employment Profile

Current Status [PEO 2, KII]

Employed Self-employed i.e. Started your own business Unemployed

Time to get employed after graduation

less than 3 months within 6 months more than 6 months more than a year

Name of Organization (Optional): _____

Designation (Optional): _____

c. Have you enhanced your qualification after graduation? No Yes ; If Yes, MS/MSc PhD
University/Institute [PEO 3, KI]

D. Have you presented your work at a technical forum such as conference, journal, symposium, technical competitions? NO YES If YES, details [PEO I, K II]

E. Have you attended any professional development course? [PEO 3, KP II]
 NO YES If YES, details

F. Are you a part of any voluntary organization working for the betterment of the society? NO YES
 If YES, details [PEO 4, KP I]

G. Please respond to the following by circling the most appropriate answer this section.

5: Very strong 4: Strong 3: Moderate 2: Weak 1: Very Weak 0: Not Applicable
How well do you agree with Program Education Objective of Bachelor of Electrical Engineering

Sno.	Statements	5	4	3	2	1	0
1	To exhibit the expertise in the field of electrical engineering to compete with technical challenges and find the solutions of complex engineering problems.						
2	To be skillful employable graduates in different domains of design, development, operation and maintenance, as well as explore opportunities for entrepreneurship.						
3	To pursue professional growth by taking up higher studies, ascertain technologies, develop proficiency in the usage of new tools.						
4	To work in multicultural environment and communities. Providing leadership in their domain, and responsive to ethical, moral, and societal issues.						

H. Evaluation of BU educational experience:

i. Indicate your level of overall satisfaction with your Learning during degree as it relates to your career:
 Very Satisfied Satisfied Neutral Dissatisfied

iii. Considering your professional experience since you received your degree, what subject(s), principle(s), item(s), etc. do you feel were missing and wish had been covered while you were a student in engineering?

I. Any Other Remarks/Suggestions:

Signature of Alumni and Date



Quality Assurance Directorate

Bahria University

Employer Survey Form – OBE

Department of Electrical Engineering – BUIC

Form No.
EE-PEC-L3-
01A

(To be filled by the Manager/In charge/Supervisor/Team Lead)

Introduction

Dear Sir/Madam,

To maintain and enhance higher teaching and research practices at Bahria University, the department of Electrical Engineering has enlisted a few Program Educational Objectives (PEOs).

PEO 1: To exhibit the expertise in the field of electrical engineering to compete with technical challenges and find the solutions of complex engineering problems.

PEO 2: To be skillful employable graduates in different domains of design, development, operation and maintenance, as well as explore opportunities for entrepreneurship.

PEO 3: To pursue professional growth by taking up higher studies, ascertain technologies, develop proficiency in the usage of new tools.

PEO 4: To work in multicultural environment and communities, providing leadership in their domain, and responsive to ethical, moral, and societal issues.

We shall be thankful if you can spare some of your valuable time to fill up this feedback form and give us your valuable suggestions for further improvement of this quality enhancement process.

a. Company Profile

Name: _____

Type(Gov/Priv): _____

Location: _____

Number of Employees (Optional): _____

Contact: _____

b. Have the graduates assumed leadership/managerial positions in your organization working beyond 4 years?

YES NO If NO, details please [PEO 4, K II]

c. Please respond to the following by circling the most appropriate answer in this questionnaire.

5: Very strong 4: Strong 3: Moderate 2: Weak 1: Very Weak 0: Not Applicable

SNo.	Statements	PEOs	5	4	3	2	1	0
1	Are you satisfied with the level of technical competence demonstrated in the field of Electrical Engineering to provide solutions to complex problems and to design new products providing value to your industry? [PEO-1K1]	PEO-1						
2	Are the graduates employed in your organization working in the field closely related to Electrical Engineering? [PEO-2 K-I]	PEO- 2						
3	Are you satisfied with the declared Program Educational Objectives (PEOs) of the Electrical Engineering Department?	-						

- d. Any Area of improvement you would see in our Graduates or Program Educational Objectives. Please Explain (Optional)
-
-

Employer Signature and Date



Quality Assurance Directorate

Bahria University

Alumni Survey Form – OBE

Department of Computer Engineering – BUIC

Form No.
EE-PEC-L3-
01A

(To be filled by Alumni – four years after completion of degree)

Dear Alumni,

We are glad that you have spent your 4 valuable years after completing Bachelors' in Computer Engineering at Computer Engineering Department, Bahria University. You will be pleased to know that your alma mater has, in a short period of time, grown to be one of the leading and sought-after universities. We would like to place on record that your co-operation and support has contributed in no small measure towards this achievement.

To maintain and enhance higher teaching and research practices at Bahria University, the department of Computer Engineering has enlisted a few *Program Educational Objectives (PEOs)*.

We shall be thankful if you can spare some of your valuable time to fill up this feedback form and give us your valuable suggestions for further improvement of this quality enhancement process.

a. Alumni Profile

Name: _____

Email: _____

Year of Graduation: _____

Degree Program: _____

Contact Number: _____

b. Employment Profile

Current Status

Employed Self-employed Unemployed Higher studies

Time to get employed after graduation

less than 3 months within 6 months more than 6 months more than a year

c. Name of Organization (If employed): _____ Designation (If employed): _____

d. Please respond to the following by circling the most appropriate answer in this questionnaire.

A: Strongly Agreed(5) B: Agreed(3-4) C: Neutral(2-3) E: Disagreed(1)

PEO 1 : Attain an ability to identify and solve challenging problems in their professions by applying theory, principles and modern tools learnt during degree program.

S No.	Statements	PLOs	5	4	3	2	1	0
1	I am satisfied with the technical concepts gained during the degree program to cater the needs of the professional real-world scenarios.	PLO – (1-5)						

PEO 2 : Demonstrate effective communication as an individual or team player with strong managerial and entrepreneurial skills.

S No.	Statements	PLOs	5	4	3	2	1	0
2	I am satisfied with the soft skills learnt during the degree program to cater for the challenges faced during my professional life.	PLO – 10						

PEO 3 : Maintain highest ethical and professional standards in pursuing their careers.

S No.	Statements	PLOs	5	4	3	2	1	0
3	I am content with the level of ethical and social responsibility gained during the period of degree program.	PLO – 8						

S No.	Statements	PLOs	5	4	3	2	1	0
4	I am satisfied with the level of deployment of the learnt knowledge, concepts, skills, and analytical abilities gained during the degree program.							

PLO1: Engineering knowledge	PLO5: Modern Tool usage	PLO9: Indiv. & Teamwork
PLO2: Problem Analysis	PLO6: The Engineer and society	PLO10: Communication
PLO3: Design/development of solution	PLO7: Environment &sustainability	PLO11: Project Management
PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning

e. Evaluation of BU educational experience:

i. Indicate your level of overall satisfaction with your training during degree as it relates to your career:
 Very Satisfied Satisfied Neutral Dissatisfied

ii. Based on your experience since graduation, what are the primary strengths of your BU education?

iii. Considering your professional experience since you received your degree, what subject(s), principle(s), item(s), etc. do you feel were missing and wish had been covered while you were a student in engineering?

f. Do you have any membership of professional engineering bodies? Yes No

g. Have you worked for the welfare or the betterment of the society? Yes No

h. Any Other Remarks/Suggestions:

Signature of Alumni and Date

Signature of Coordinator and Date



Quality Assurance Directorate

Bahria University

Employer Survey Form – OBE

Department of Computer Engineering – BUIC

Form No.
EE-PEC-L3-
01A

(To be filled by the Manager/In charge/Supervisor/Team Lead)

Dear Sir/Madam,

To maintain and enhance higher teaching and research practices at Bahria University, the department of Computer Engineering has enlisted a few Program Educational Objectives (PEOs).

PEO 1: Attain an ability to identify and solve challenging problems in their professions by applying theory, principles and modern tools learnt during degree program.

PEO 2: Demonstrate effective communication as an individual or team player with strong managerial and entrepreneurial skills.

PEO 3: Maintain highest ethical and professional standards in pursuing their careers.

PEO 4: Engage in life-long learning to continually polish their professional capabilities for their personal growth and the betterment of society.

We shall be thankful if you can spare some of your valuable time to fill up this feedback form and give us your valuable suggestions for further improvement of this quality enhancement process.

a. Company Profile

Name: _____

Type(Gov/Priv): _____

Location: _____

Number of Employees: _____

Contact: _____

b. Employee Profile

Name: _____

Email: _____

Year of Graduation: _____

Degree Program: _____

Contact: _____

Designation (Optional): _____

c. Please respond to the following by circling the most appropriate answer in this questionnaire.

5: Very strong 4: Strong 3: Moderate 2: Weak 1: Very Weak 0: Not Applicable

S No.	Statements	PEOs	5	4	3	2	1	0
1	We are satisfied with the level of technical and problem-solving skills of your graduates. (PEO-I)	PEO-1						
2	We are satisfied with the level of teamwork and soft skills of your graduates to cater for the challenges faced in their professional lives.	PEO- 2						

	3	We are satisfied with the level of ethical and social responsibility of your graduates with their positive contribution in our company.	PEO- 3								
	4	We are satisfied with the level of success of your graduates in learning new areas, emerging engineering technologies needed for the professional development.	PEO- 4								
	5	According to my experience the current BCE program is compliant with the above mentioned PEOs?									

Employer Signature and Date



Community Support Program Form – OBE
Department of _____ Engineering – BU _____

Form No.
PEC-L2-03A

(To be filled at the completion of CSP activity)

To be filled by Manager/ Supervisor/ CSP Coordinator:

Name: _____

Organization: _____

Designation: _____

a. Information of the student:

Student Name: _____ Email: _____

Enrollment No: _____ Degree Program: _____

Year of Graduation: _____ Batch: _____

CSP Activity: _____ CSP Duration: _____

b. Please respond to the following by selecting the most appropriate choice for candidate

5: Very strong 4: Strong 3: Moderate 2: Weak 1: very Weak 0: Not applicable

Sno.	Statements	PLOs	5	4	3	2	1
1	Ability to assess societal issues , keeping in view safety, legal and cultural constraints .	PLO- 06					
2	Demonstrate sensitivity towards various social and environmental problems.	PLO- 07					
3	Ability to demonstrate ethical principles and societal norms .	PLO- 08					
4	Ability to work independently as well as in a team .	PLO- 09					
5	Ability to communicate effectively .	PLO- 10					
6	Ability to demonstrate management skills and to accomplish given task in specific time.	PLO- 11					
7	Demonstrate the initiative and drive to learn new things.	PLO- 12					

c. Any Other Remarks/Suggestions:

Signature of Manager/ Supervisor/ CSP Coordinator and Date



Form No.
PEC-L2-01A

Graduating Student/Exit Survey Form – OBE
Department of _____ Engineering – BU _____
(To be filled by graduating students)

Introduction

Dear Graduating Student

We are glad that you have spent valuable years of Bachelor in Electrical Engineering at Electrical Engineering Department, Bahria University. You will be pleased to know that your alma mater has, in a short period of time, grown to be one of the leading and sought-after universities. We would like to place on record that your co-operation and support has contributed in no small measure for this achievement. To maintain and enhance higher teaching and research practices at Bahria University, Pakistan Engineering Council (PEC) has enlisted a few Program Learning Outcomes (PLOs) inline to the Washington Accord's consortium. Program learning outcomes represent the culminating knowledge, behaviors, skills or abilities that students achieve with the progression of the program. The PLOs not only represent the skills or abilities one would normally associate with a specific course or engineering, but they also tied to our program and university mission, vision, and also core values - making the learning experience distinct.

We shall very much appreciate and be thankful if you can spare some of your valuable time to fill up this feedback form and give us your valuable suggestions for further improvement of this process. Please rate yourself

a. Graduate Student Profile:

Student Name: _____

Enrollment No: _____

Year of Graduation: _____

Batch Intake : _____

b. Student's evaluation of Program studied:

Please respond to the following by encircling the most appropriate choice.

5: Very satisfied **4:** Satisfied **3:** Neutral **2:** Dissatisfied **1:** Very dissatisfied

Sno	Statements	PLOs	5	4	3	2	1
1	Gained the ability to apply current scientific and engineering knowledge to solve complex engineering problems.	PLO- 01					
2	Gained the ability to identify complex engineering problems and formulate solutions based on current scientific and engineering knowledge.	PLO- 02					
3	Gained the ability to design and develop solutions for complex engineering problems while keeping in view health, safety and environmental considerations.	PLO- 03					
4	Gained the ability to review and investigate complex engineering problems in a scientific way, starting from survey, inference and experimentation.	PLO- 04					

5	Gained the ability to utilize modern tools for your problem solving, to provide solution for a complex engineering problem.	PLO- 05					
6	Gained the ability to apply engineering knowledge to assess societal issues in a professional way, keeping in view the safety, legal and cultural constraints.	PLO- 06					
7	Gained the ability to apply engineering knowledge to develop environmental friendly sustainable solutions	PLO- 07					
8	Gained the ability to apply ethical principles and commit to professional ethics and norms of engineering practice.	PLO- 08					
9	Gained the ability to work independently as well as in a team.	PLO- 09					
10	Gained the ability to communicate effectively (both orally and through writing) on complex engineering activities.	PLO- 10					
11	Gained the ability to demonstrate management skills during degree	PLO- 11					
12	Gained the ability to realize the importance of continuous professional development throughout the life.	PLO- 12					

PLO1: Engineering knowledge	PLO5: Modern Tool usage	PLO9:Indiv.& Team work
PLO2: Problem Analysis	PLO6: The Engineer and society	PLO10: Communication
PLO3: Design/development of solution	PLO7: Environment &sustainability	PLO11: Project Management
PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning

c. Remarks about the overall experience in the department of program studies:

Signature of Student and Date



Internship Survey Form – OBE
Department of _____ Engineering – BU _____

Form No.
PEC-L2-02A

(To be filled by the Manager/In charge/Supervisor/Team Lead)

Introduction

a. Evaluator Profile

Name: _____ Email: _____

Contact: _____ Designation: _____

Organization: _____

b. Internee Profile:

Student Name: _____ Enrollment No: _____

Duration of Internship : _____ Batch: _____

c. Internee Performance evaluation:

Please respond to the following by encircling the most appropriate choice.

5: Very strong **4:** Strong **3:** Moderate **2:** Weak **1:** very Weak **0:** Not applicable

Sno.	Statements	PLOs	5	4	3	2	1
1	Demonstrate and show the ability to acquire the fundamental engineering knowledge	PLO- 01					
2	Demonstrate the ability to analyze engineering problem(s)	PLO- 02					
3	Demonstrate the ability to design a system component or process	PLO- 03					
4	Demonstrate the ability to investigate appropriate source of data to the assigned task	PLO- 04					
5	Demonstrate the ability to use modern software/hardware tools during internship	PLO- 05					
6	Demonstrate the sensitivity towards societal issues and provision of relevant solutions through engineering knowledge	PLO- 06					
7	Awareness of applying engineering knowledge for sustainable development	PLO- 07					
8	Punctuality and attitude towards assigned task(s) at internship	PLO- 08					

9	Self-confidence to accomplish task(s) independently and to coordinate and collaborate with the team to perform the task(s)	PLO- 09																
10	Demonstrate the ability to communicate effectively (both verbal and non-verbal)	PLO- 10																
11	Demonstrate the ability to manage assigned task(s) within given constraints	PLO- 11																
12	Demonstrate the initiative and drive for learning new things	PLO- 12																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">PLO1: Engineering knowledge</td> <td style="padding: 2px;">PLO5: Modern Tool usage</td> <td style="padding: 2px;">PLO9: Indiv.& Team work</td> </tr> <tr> <td style="padding: 2px;">PLO2: Problem Analysis</td> <td style="padding: 2px;">PLO6: The Engineer and society</td> <td style="padding: 2px;">PLO10: Communication</td> </tr> <tr> <td style="padding: 2px;">PLO3: Design/development of solution</td> <td style="padding: 2px;">PLO7: Environment &sustainability</td> <td style="padding: 2px;">PLO11: Project Management</td> </tr> <tr> <td style="padding: 2px;">PLO4: Investigation</td> <td style="padding: 2px;">PLO8: Ethics</td> <td style="padding: 2px;">PLO12: Lifelong learning</td> </tr> </table>							PLO1: Engineering knowledge	PLO5: Modern Tool usage	PLO9: Indiv.& Team work	PLO2: Problem Analysis	PLO6: The Engineer and society	PLO10: Communication	PLO3: Design/development of solution	PLO7: Environment &sustainability	PLO11: Project Management	PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning
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PLO4: Investigation	PLO8: Ethics	PLO12: Lifelong learning																

d. General remarks:

Signature of Manager/In charge/Supervisor/Team Lead/Career Service Coordinator and Date



Report No:

Course Assessment Report – OBE

Department of _____ Engineering – BU _____

Course Name	
Course Code	
Section	
Total Number of Students	
Total Number of Lectures	
Course Lecturer	
Cluster Head	
Report Date	

CLOs	Statement	Mapped PLO	Domain	Level
CLO1				
CLO2				
CLO3				
CLO4				

State the changes made from the previous course outcomes (if any)

Grade Distribution	A+	A-	B+	B	B-	C+	C	C-	D+	D	F
Number	85-100	80-84	75-79	71-74	68-70	64-67	60-63	57-59	54-56	50-53	0-49
Average CGPA							3.04				
Average Marks							67.8				
Average Grade							B				

Attainment level of PLOs				
PLOs	Description		Achievement (%)	Comments/Remarks (If Failing)
PLO1			70	
PLO2			30	Comments
PLO3			70	
PLO4			30	Comments

PLO5		30	Comments
------	--	----	----------

Attainment level of CLOs (Direct)				
CLOs	Description	Achievement (%)	Remarks for CQI Cycle	
CLO1		70	Comments	
CLO2		30	Comments	
CLO3		70	Comments	
CLO4		30	Comments	
Student's perception on the attainment of CLOs/PLOs (Indirect)				
	CLOs	Mapped PLOs	Achievement	Comments/ Remarks
CLO1				
CLO2				
CLO3				
CLO4				
Reflections Please identify the areas of improvement and corrective action plan to be taken for improvement of outcomes.				
Item	Questions	Comments		
Course Contents	Please comment on the course content approved for this course.	<input type="checkbox"/> Sufficient <input type="checkbox"/> Insufficient Remarks (If any):		
	Can the students meet the expected outcomes?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Only a limited group Remarks (If any):		

	<p>Please comment on the course content delivered by you.</p>	<input type="checkbox"/> Fully Covered <input type="checkbox"/> Partially Covered <p>Remarks (Significance of leftover contents):</p>
Method of teaching	<p>Please comment on the use of latest tools available</p>	<input type="checkbox"/> Minimum level <input type="checkbox"/> Satisfactory level <input type="checkbox"/> None <p>Remarks (If any):</p>
	<p>Please comment on the other teaching method used</p>	<input type="checkbox"/> Active learning <input type="checkbox"/> Cooperative learning <input type="checkbox"/> Problem based learning <input type="checkbox"/> Project based learning <p>Remarks (If any):</p>
	<p>Please comment on the students response to the teaching methods used.</p>	<input type="checkbox"/> Responded well <input type="checkbox"/> Did not respond well <p>Remarks (If any):</p>

Assessments and Corrective Actions			
Method of assessment	<p>Please comment on the assessment tools listed in the course outline which you have adopted</p>	<input type="checkbox"/> Quiz Performance Target (%): _____ <input type="checkbox"/> Assignment Performance Target (%): _____ <input type="checkbox"/> Course Project Performance Target (%): _____	<input type="checkbox"/> Midterm/Final Exams Performance Target (%): _____ <input type="checkbox"/> Presentation Performance Target (%): _____ <input type="checkbox"/> CEP Performance Target (%): _____
		<p>Remarks (Any other tools to be added):</p>	
	<p>Please comment on the distribution of marks as stated in the course outline.</p>	<input type="checkbox"/> Well distributed <input type="checkbox"/> Needs re-distribution <p>Remarks (If any):</p>	

Corrective Action Plan	<p>Please state the type of failure and your action plan details for closing the CQI cycle.</p> <p>Please state the implementation plan that you will adopt.</p>	<p>Failure Type:</p> <p><input type="checkbox"/> CLO <input type="checkbox"/> PLO <input type="checkbox"/> Workshop <input type="checkbox"/> Comprehensive Assignment <input type="checkbox"/> Repeat Course</p> <p>CLO (Number of Failed CLOs):_____</p> <p>CLO (Number of Failing Students):_____</p> <p>PLO (Number of Failed CLOs):_____</p> <p>PLO (Number of Failing Students):_____</p> <p>Remarks (If any):_____</p>
Signature		
	Date	

Comments: Subject Domain Specialist, Cluster Head, Department Head		
Signature		Date:



Bahria University
Department of Electrical Engineering

Program Assessment Report

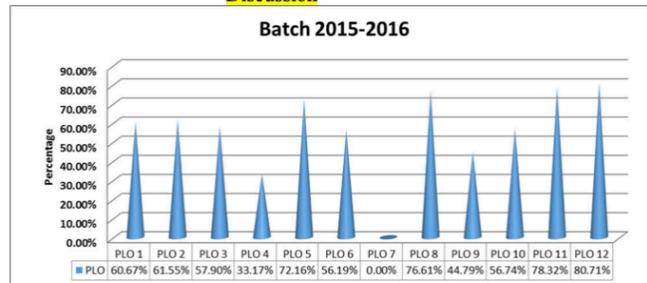
<Batch year>

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1. PLO-CQI at Program Level

1.1. PLO Attainment through Direct Assessment

Discussion

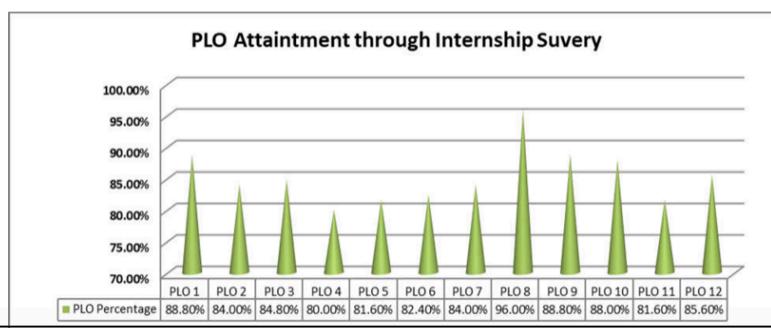


1.2. PLO Attainment through Indirect Surveys

Indirect assessment of attainment of program learning outcomes considers three different surveys which includes internship survey, CSP (community service program) survey and graduating survey. Following sections discuss the data achieved through these indirect surveys.

1.2.1. Internship Survey

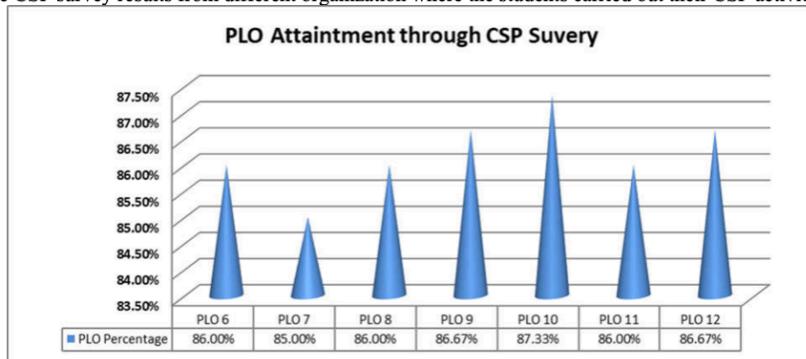
Following graph shows the internship survey results from different organization where the students carried out their internship.



2

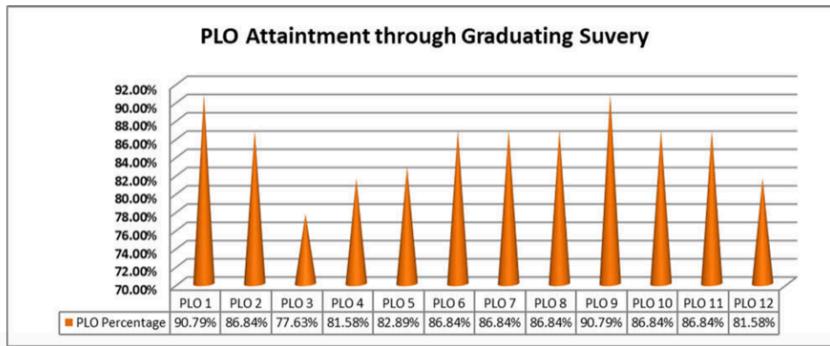
1.2.2. Community Service Program Survey

Following graph shows the CSP survey results from different organization where the students carried out their CSP activity.



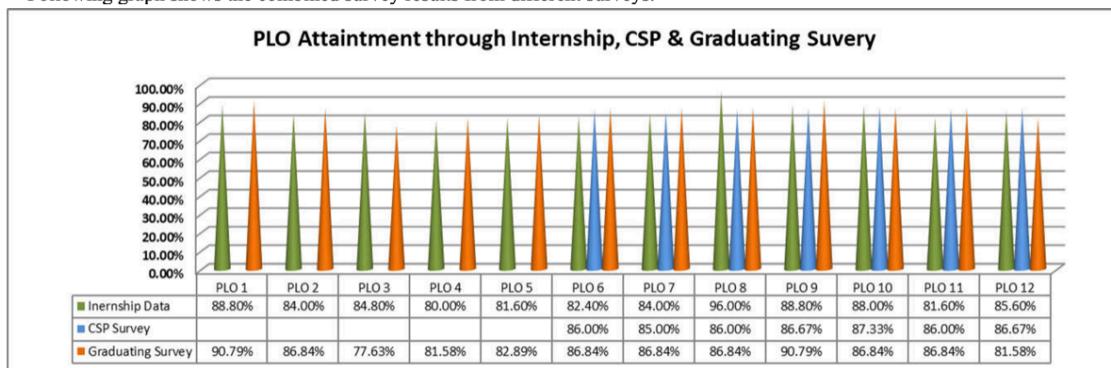
1.2.3. Graduating Survey

Following graph shows the graduating survey results from the students who graduated from the university.

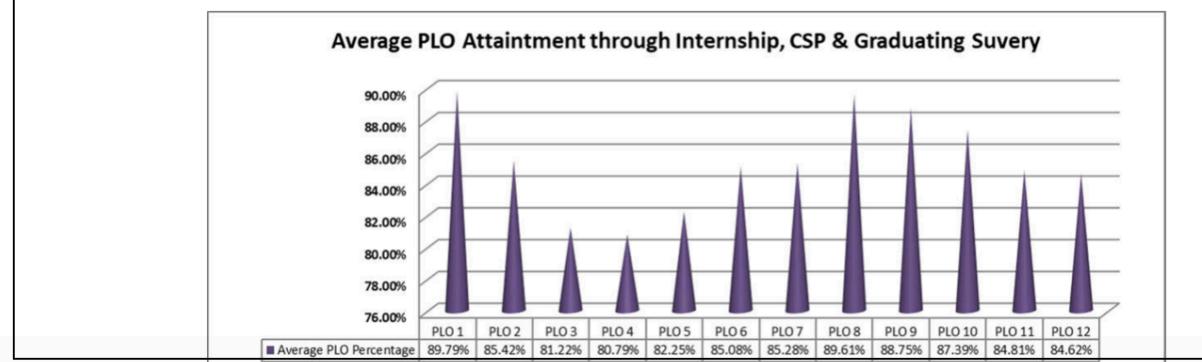


1.2.4. Average Score of PLO through different Surveys

Following graph shows the combined survey results from different surveys.



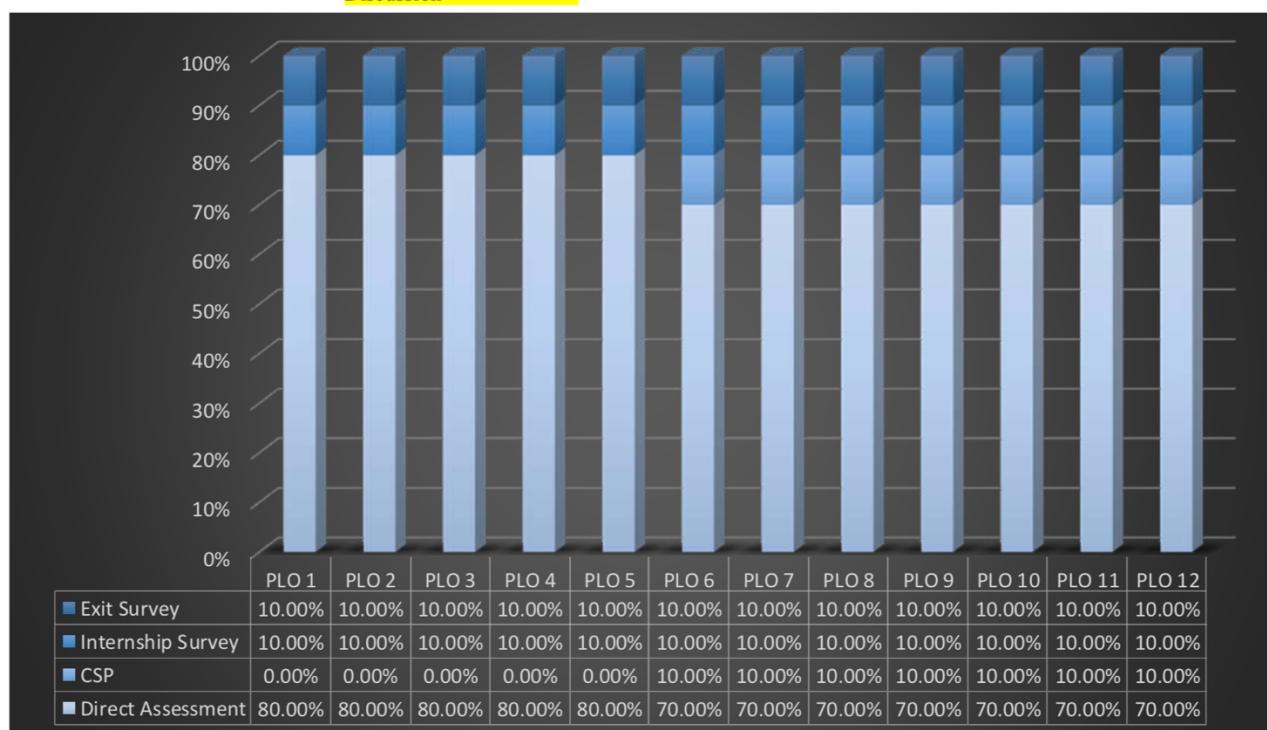
The graph shows the average results of the Program Learning Outcome from the surveys:



4

1.3. Discussion Regarding PLO Attainment at Program Level

Discussion



Chapter 2:

2.PLO-CQI at Course Level

2.1. PLO Attainment at Course Level

Direct assessment of attainment of program learning outcomes considers quizzes, presentation, assignments, midterm and final exam done by students during semesters and their results summary is as follows:

Program Assessment Report (PAR)													
Batch 2015-16		Program Learning Outcomes											
Course	Section	1	2	3	4	5	6	7	8	9	10	11	12
Electrical Machines	BEE-5A	72.22%	72.22%	37.67%	49.53%								
	BEE-5B	65.94%	62.74%	32.34%	45.15%								
	BEE-5C	66.44%	72.04%	31.71%	45.92%								
Electrical Machines (Lab)	BEE-5A	93.27%		41.12%	31.52%								
	BEE-5B	70.00%		46.67%	27.34%								
	BEE-5C	79.86%		45.43%	29.21%								
Electromagnetic Field Theory	BEE-5A	53.00%	72.33%	43.94%	44.27%								
	BEE-5B	50.72%	74.72%	41.85%	44.70%								
	BEE-5C	50.72%	71.51%	40.37%	43.98%								
Communication Systems	BEE-5A	35.34%	90.88%	74.11%									
	BEE-5C	44.30%	70.68%	65.79%									
	BEE-5B	37.21%	98.44%	72.86%									
Communication Systems (Lab)	BEE-5A		21.23%		61.25%	92.67%							
	BEE-5B		26.64%		56.71%	64.78%							
	BEE-5C		20.63%		57.08%	85.68%							
Data	BEE-5A	58.93%	80.36%	80.28%									

9

	Communication & Networking	BEE-5B	51.07%	74.20%	74.28%							
		BEE-5C	60.21%	82.00%	85.60%							
Data Communication & Networking (Lab)		BEE-5A	49.23%	25.00%	85.80%							
		BEE-5B	50.00%	25.64%	81.96%							
		BEE-5C	41.32%	27.13%	87.93%							
Numerical Analysis		BEE-5A	72.00%	81.35%	50.01%	25.98%						
		BEE-5B	71.88%	72.47%	52.25%	20.72%						
		BEE-5C	69.31%	67.72%	53.47%	22.98%						

10

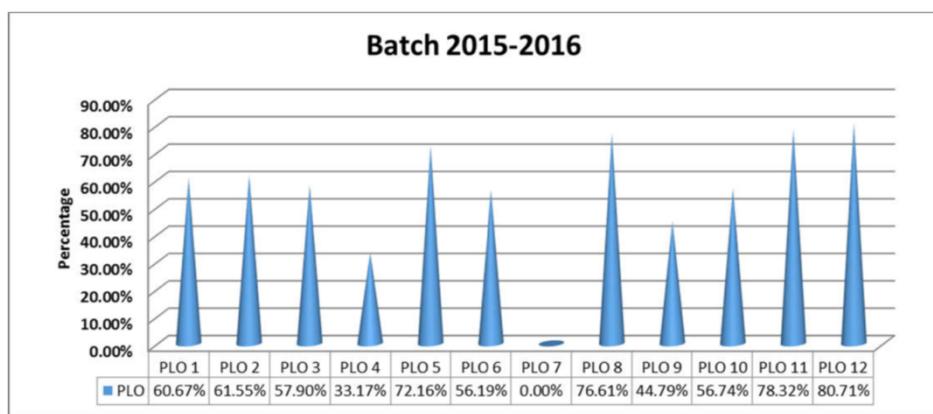
Spring -2018	Instrumentation & Measurements	BEE-6A	66.31%	48.68%	50.16%							
		BEE-6B	63.65%	44.57%	49.50%							
		BEE-6C	65.71%	48.56%	50.16%							
	Instrumentation & Measurements Lab	BEE-6A			28.51%	22.68%	82.99%					
		BEE-6B			26.81%	20.94%	78.17%					
		BEE-6C			28.59%	22.99%	86.57%					
	Linear Control Systems	BEE-6A	71.68%	70.22%	74.36%							
		BEE-6B	67.95%	65.91%	81.42%							
		BEE-6C	75.57%	65.41%	79.88%							
	Linear Control Systems (Lab)	BEE-6A		76.67%	57.12%		30.86%					
		BEE-6B		60.29%	43.00%		23.60%					
		BEE-6C		69.14%	45.94%		27.68%					
	Power Distribution & Utilization	BEE-6A	71.66%	77.27%		48.54%						
		BEE-6B	68.65%	73.11%		22.23%						
		BEE-6C	67.46%	73.42%		20.39%						
	Power Distribution & Utilization (Lab)	BEE-6A	72.65%	47.15%	45.42%							
		BEE-6B	73.39%	44.60%	42.39%							
		BEE-6C	74.80%	49.88%	48.17%							
	Microprocessors/ Microcontroller Based Systems	BEE-6A	43.84%	62.67%	61.44%	25.08%						
		BEE-6B	47.28%	57.02%	60.24%	21.60%						
		BEE-6C	57.72%	77.78%	74.32%	28.42%						
	Microprocessors/ Microcontroller Based Systems (Lab)	BEE-6A	30.34%		24.01%		83.28%					
		BEE-6B	29.07%		23.23%		82.14%					
		BEE-6C	26.96%		23.44%		76.06%					

FALL -2018	Power Electronics	BEE-7A	65.90%	23.64%	41.58%								
		BEE-7B	74.20%	27.52%	52.80%								
		BEE-7C	79.00%	23.80%	45.05%								
	Power Electronics (Lab)	BEE-7A	28.19%	93.37%	73.40%								
		BEE-7B	30.25%	94.13%	81.94%								
		BEE-7C	27.45%	76.05%	95.19%								
	Technical Writing & Presentation Skills	BEE-7A						56.28%		45.53%		83.08%	
		BEE-7B						50.69%		47.27%		79.00%	
		BEE-7C						57.47%		45.16%		82.25%	
	Intro to IR	BEE-7A							46.23%			77.64%	
		BEE-7B							47.05%			76.90%	
		BEE-7C							52.90%			85.41%	
	Industrial Automation	BEE-7A	80.00%	55.55%	78.44%								
		BEE-7B	81.19%	53.18%	80.40%								
		BEE-7C	78.80%	51.68%	77.15%								
	Industrial Automation(Lab)	BEE-7A	27.92%		82.20%		80.30%						
		BEE-7B	26.05%		81.11%		80.45%						
		BEE-7C	27.72%		79.76%		79.09%						
	Wave Propagation & Antennas	BEE-7D	84.68%	57.89%									
	Wave Propagation & Antennas (Lab)	BEE-7D	32.19%	63.10%	95.83%								
	Digital Communication	BEE-7D	77.36%	55.86%			84.32%						
	Digital Communication (Lab)	BEE-7D	49.14%		90.53%		78.81%						

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Spring -2019	Final Year Project	BEE-8A,B,C	89.76%	89.39%			90.91%				79.00%	89.00%	90.90%	
	Engineering Ethics	BEE-8A						84.00%		91.00%				
		BEE-8B						87.83%		91.29%				
		BEE-8C						84.37%		94.78%				
	Embedded System Design	BEE-8A	87.68%	53.61%	48.57%	30.56%				94.78%				
		BEE-8B	83.85%	55.34%	42.92%	21.35%								
		BEE-8C	81.58%	49.58%	46.36%	30.22%								
	Embedded System Design (Lab)	BEE-8A	57.86%		45.47%		82.52%							
		BEE-8B	63.49%		61.60%		94.29%							
		BEE-8C	49.63%		44.35%		72.80%							
	Engineering Economics & Management	BEE-8A										78.53%		
		BEE-8B										75.25%		
		BEE-8C										68.59%		
	Introduction to Mechatronics	BEE-8A	70.34%	64.71%	59.08%		56.57%				27.97%			
		BEE-8B	65.02%	65.18%	64.90%		63.25%				30.25%			
		BEE-8C	59.92%	59.61%	57.02%		58.08%				30.10%			
	Introduction to Mechatronics (Lab)	BEE-8A			54.30%	24.95%	80.71%							
		BEE-8B			58.89%	24.14%	78.19%							
		BEE-8C			58.05%	24.79%	70.97%							
	Digital Signal Processing	BEE-8D	75.97%	73.58%	46.46%									
	Digital Signal Processing (Lab)	BEE-8D	79.84%		43.65%		54.65%							
	Telecom Transmission &	BEE-8D	83.45%	79.09%										
	Telecom Transmission & (Lab)	BEE-8D	50.36%	85.98%	80.00%									
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11	PLO 12
Average of Each PLO must be more than 60% as per the designated KPI for every Batch			60.67%	61.55%	57.90%	33.17%	72.16%	85.40%	0.00%	76.61%	44.79%	56.74%	78.32%	80.71%

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2.2. Suggested Corrective Action Plan

2.2.1. Identified Learning Barriers

Discussion

2.2.2. Suggested Planned Improvements

Discussion

The corrective plan includes the lecturing of the concepts in different courses. Table below shows the list of courses selected with their relevant PLO coverage for improvement. The details of the whole process has be attached as Annexure.

S.no	Program Learning Outcome	Corrective Action Courses	Faculty Member	Designated Cluster Head	Date	Day	Time	Venue
1.	PLO3 (Design & Development)	Microprocessor	Engr. Zuhair Arfeen	Dr. Raza	24 th May 2019	Friday	09:45-10:45	Fatima Jinnah Hall
2.	PLO4 (Investigation)	Electrical Machines	Engr. Ravi Mohan Lal	Dr. Raza	24 th May 2019	Friday	11:00-12:00	Fatima Jinnah Hall
3.	PLO7 (Environment & Sustainability)	Energy Management Systems	Engr. Basit Ali	Dr. Raza	1 st Dec 2018	Saturday	9:00-4:00	Fatima Jinnah Hall
4.	PLO9 (Individual & Teamwork)	International Relations	Engr. Umair Shahid	Dr. Aurangzaib	27 th May 2019	Monday	08:30-09:30	Fatima Jinnah Hall
5.	PLO10 (Communication)	Technical Writing & Presentation Skills	Madiha Naim	Faraz Hmayun	27 th May 2019	Monday	09:45-10:45	Fatima Jinnah Hall

Chapter 3:

3.PLO-CQI at Student Level

3.1. PLO Attainment at Student Level

Discussion

Graphical representation on how many students have failed to achieve the desired KPI

3.2. Suggested Corrective Action Plan

Discussion

3.2.1. Identified Learning Barriers

Discussion

3.2.2. Suggested Planned Improvements

Discussion



Phase-wise Requirements for OBE Software Implementation Team

Phase 1:

A) Learning Domains Analytics

This OBEBU module/feature shall summarize the performance of students in the undergraduate program in relation to various levels and domains of Blooms taxonomy. The report should include the following items:

- a) Summary of Individual Domains Activities
- b) Cognitive Domain Analytics
- c) Affective Domain Analytics
- d) Psychomotor Domain Analytics

B) Learning Outcomes Analytics

This OBEBU module/feature shall provide a set of graphs and tables that indicate the achievement levels of learning outcomes as well as the achievement levels of their key performance indicators:

- a) Course Learning Outcomes Summary Graph
- b) Program Learning Outcomes Summary Graph
- c) Performance Indicators Summary Graph
- d) Performance Indicators Achievements Results (Table)

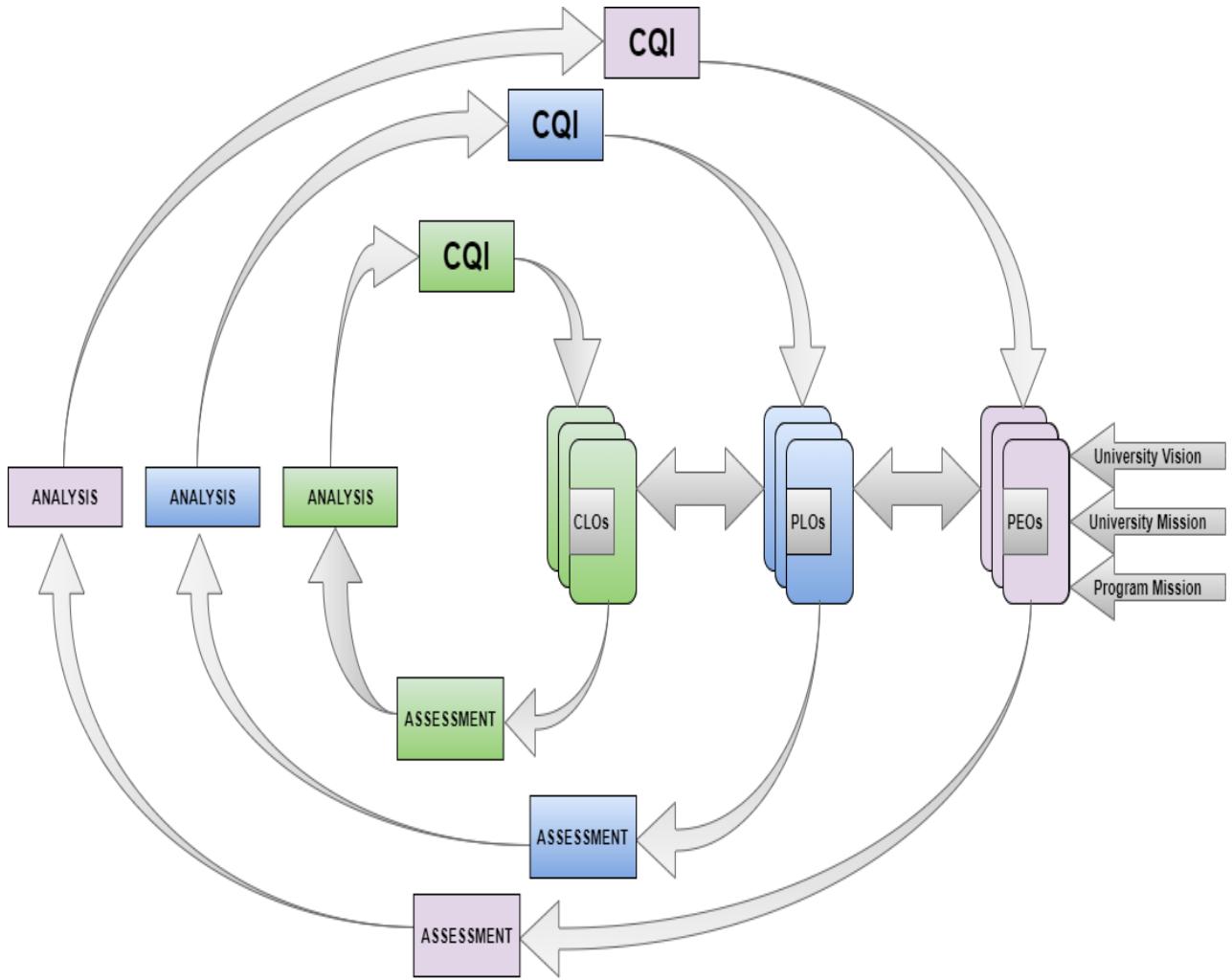
C) Survey Forms

- a) PEO: Alumni Survey Form
- b) PEO: Employer Survey Form
- c) PLO: Internship Survey Form
- d) PLO: Community Support Form
- e) PLO: Exit Survey Form

OBE Implementation Model EE

This model has two sections namely; Continuous Quality Improvement (CQI) cycles related to entities and Student Perspective: Clearing/passing of an entity and its associated Corrective actions.

1. Continual Quality Improvement (CQI) cycles

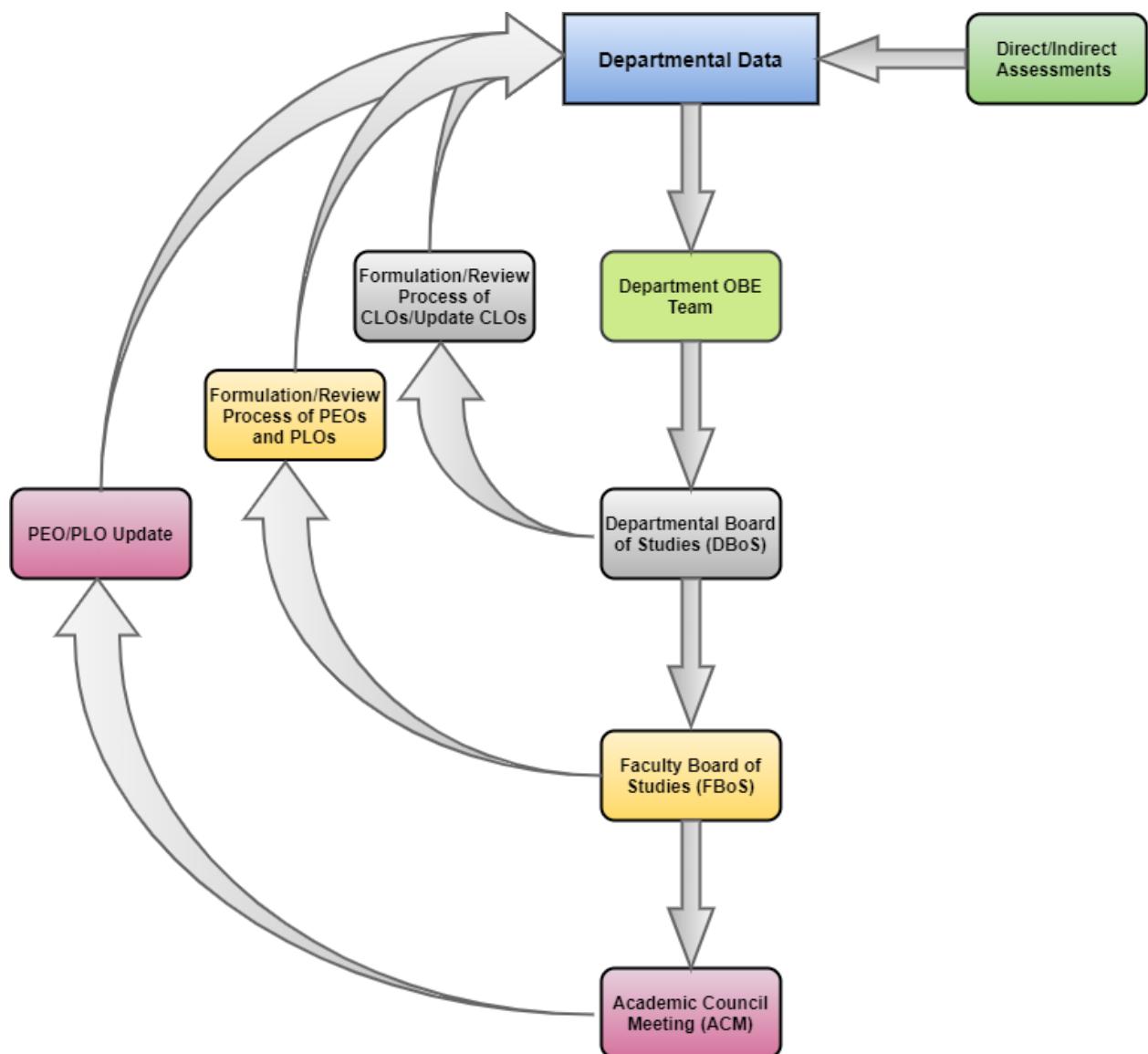


[Figure 1] CQI Cycle for OBE Implementation Model

In the model the CQI cycles are associated with three entities e.g. Program Education Objectives (PEOs), Program Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs) .Each cycle comprises of assessment, analysis and associated continuous quality improvement actions as shown in Figure [1]. The respective three CQI cycle are namely:

- PEO Level CQI Cycle (Level - 3 (L3))
- PLO Level CQI Cycle (Level - 2 (L2))
- CLO Level CQI Cycle (Level - 1 (L1))

The following individual section covers details of various tasks e.g. Modes/ways of data collection, Analysis of Assessment results, process of reviewing and process to update/establishes the respective entities e,g, PEOs, PLOs and CLOs. Figure 2 depicts the approving bodies of associated tasks,



[Figure 2] CQI Approving Bodies of Associated tasks

1.1 PEO Level CQI Cycle (Level - 3 (L3))

This section covers the details of CQI cycle L3 related to PEOs.

1.1.1 Modes/ways of Assessment Data Collection

Data for assessment of PEOs shall be collected using following sources

- Employer Feedback
- Alumni Feedback

1.1.2 Analysis of Assessment Result

For analysis on the data collected, each engineering department shall have its own OBE team which will be responsible to analyze the attainment of PEOs. The team shall be established by the respective Head of Department (HoD). The OBE team shall comprise of subject specialist FMs/research group heads/ cluster heads/selected FMs / DBoS Members.

This team shall devise a mechanism to acquire the required data (in section 1.1.1) via forms, Google docs / MoM etc. (recommended by Department Board of Studies (DBoS) and approved by Department Board of Studies (FBoS)). Based on the data gathered, assessment and analysis shall be performed for CQI Cycle L3

1.1.3 Process of Reviewing

Process to reviewing of mechanism of data acquiring or any metrics related to PEOs e.g. adding new Key Performance Indicators (KPIs)/establishing KPIs/Mapping (PEOs-Vision/Mission etc.)/ Change in Section 1.1.1 and Section 1.1.2 shall be based on recommendation of departments OBE Team, discussed at DBoS and approved FBoS. CQI Cycle L3 report to be completed after four years from the graduation of a batch.

1.1.4 Process to update/ establishing new PEOs

In order to update or establish new PEOs, the recommendations of the OBE team regarding updating/establishing new PEOs (based on Cooperate Advisory Committee (CAC) Feedback/ New Curriculum/Guidelines from governing bodies/ CQI Cycle L3 report) shall be discussed at DBoS, recommended by FBoS and approved at Academic Council Meeting (ACM).

1.2 PLO Level CQI Cycle (Level - 2 (L2))

This section covers the details of CQI cycle L2 related to PLOs.

1.2.1 Modes/ways of Assessment Data Collection

Data for assessment of PLOs shall be collected using following sources

- Graduating Students Feedback
- Internship Feedback
- Community Support Program (CSP) Feedback
- PLO based assessment average results (Direct Assessment Method)

1.2.2 Analysis of Assessment Result

For analysis on the data collected, each engineering department shall have its own OBE team which will be responsible to analyze the attainment of PLOs. The team shall be established by the respective Head of Department (HoD). The OBE team shall comprise of subject specialist FMs/research group heads/ cluster heads/selected FMs / DBoS Members.

This team shall devise a mechanism to acquire the required data (in section 1.2.1) via forms, Google docs / MoM etc. (recommended by Department Board of Studies (DBoS) and approved by Department Board of Studies (FBoS)). Based on the data gathered, assessment and analysis shall be performed for CQI Cycle L2

For analysis of Assessment results based on data collection from direct and indirect assessment method; contribution from indirect assessment (if required) is to be at max 10% from individual data collection source. The attainment threshold for a PLO to be at a satisfactory level, is to be at least 70%.

1.2.3 Process of Reviewing

Process to reviewing of mechanism of data acquiring or any metrics related to PLOs e.g. Attainment Threshold(KPI)/adding new KPI/Mapping (PLOs – PEOs)/ Change in Section 1.2.1 and Section 1.2.2 shall be based on recommendation of departments OBE Team, discussed at DBoS and approved FBoS. CQI Cycle L2 report to be completed after passing out of a graduating batch.

1.2.4 Process to update/ establishing new PLOs

In order to update or establish new PLOs, the recommendations of the OBE team regarding

updating/establishing new PLOs (based on New Curriculum/Guidelines from governing bodies/ CQI Cycle L2 report) shall be discussed at DBoS, recommended by FBoS and approved at ACM.

1.3 CLO Level CQI Cycle (Level - 1 (L1))

This section covers the details of CQI cycle L1 related to CLOs.

1.3.1 Modes/ways of Assessment Data Collection

Data for assessment of CLOs shall be collected using following sources

- Students Feedback
- Course based CLO assessment average results (Direct Assessment Method)

1.3.2 Analysis of Assessment Result

For analysis on the data collected, each engineering department shall have its own OBE team which will be responsible to analyze the attainment of CLOs. The team shall be established by the respective Head of Department (HoD). The OBE team shall comprise of subject specialist FMs/research group heads/ cluster heads/selected FMs / DBoS Members.

This team shall devise a mechanism to acquire the required data (in section 1.3.1) via forms, Google docs / MoM etc. and approved at DBoS. Based on the data gathered, assessment and analysis shall be performed for CQI Cycle L1

For analysis of Assessment results based on data collection from direct and indirect assessment method; contribution of indirect assessment (if required) is to be at max 10% from an individual data collection source. The attainment threshold for a CLO to be at satisfactory level is to be at least 60%.

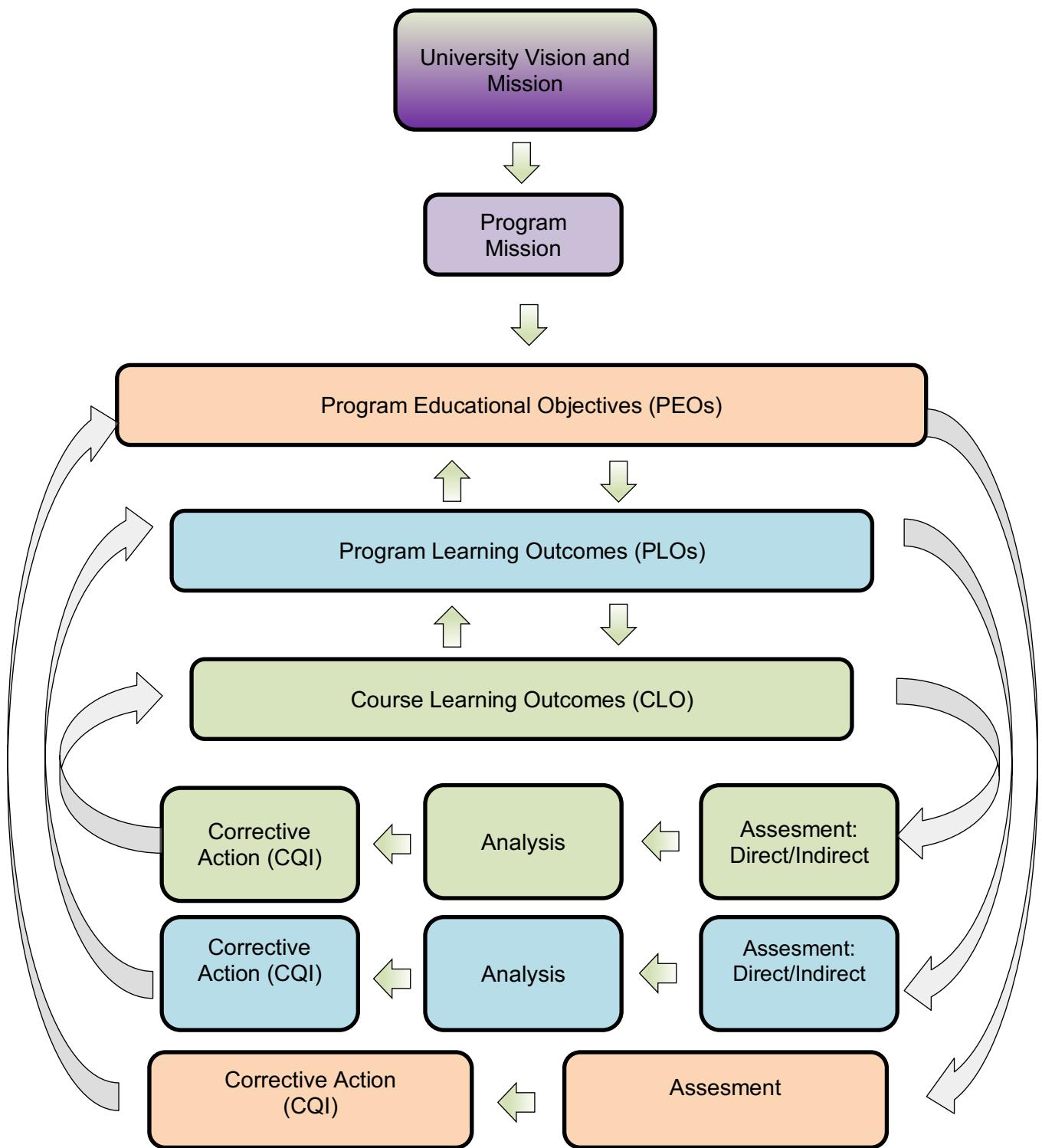
1.3.3 Process of Reviewing

Process to reviewing of mechanism of data acquiring or any metrics related to CLOs e.g. Attainment Threshold(KPI)/adding new KPI/Mapping (CLOs – PLOs)/ Change in Section 1.2.1 and Section 1.2.2 shall be based on recommendation of departments OBE Team, discussed at DBoS and approved FBoS. Comprehensive CQI Cycle L1 Report for CLOs (of all offered regular courses) to be compiled after every regular semester.

1.3.4 Process to update/ establishing new CLOs

In order to update or establish new CLOs, the recommendations of the OBE team regarding updating/establishing new CLOs (based CQI Cycle L1 report\ course review report) shall approved at DBoS. Minor Changes related to change in method of assessment / mapping / levels / adding CLO/contents (according to new trends) can be done (before the start of the semester). in consultation with OBE Team intimation/change to be approved at subsequent DBoS and imitated to FBoS

Summarized OBE Implementation Model with respect to CQI Cycle L1, CQI Cycle L2, CQI Cycle L3 can be seen in Figure 3.



[Figure 3] OBE Implementation Model

2. Student Perspective: Clearing/passing and its associated Corrective actions

This section covers the OBE implementation model domain in terms of student perspective of Clearing/passing of a CLO/PLO and its associated corrective actions.

2.1 Passing a CLO/PLO

In order to declare a CLO/PLO to be passed/cleared with respective to student result the following rules apply:

- A CLO shall be cleared (satisfactory level), if a student takes at least 50% marks (in the associated assessment method e.g. quiz/assignment/exams/project etc.) in that respective CLO of a given course.
- A PLO is said to be cleared (satisfactory level), if 60% of the CLOs mapped on that respective PLO are passed.
-

2.2 Process of Establish/update rules for clearing/passing a CLO/PLO

In order update rules stated in Section 2.1, ACM approval is required. Furthermore to establish/update corrective action relates to CLOs/PLOs approval of ACM

2.3 Corrective Action related to CLO Failure

For cohort level failure (more than 50% unable to clear a CLO) / deficiency associated with not clearing a CLO the following is recommended corrective actions to overcome the deficiency:

- Attend workshop/tutorial session/ (in start of next semester/course) /any other recommendation by Department OBE Team.

2.4 Corrective Action related to PLO Failure

Batch level PLO result status to be regularly monitored for appropriate corrective action for timely graduation. For cohort level failure / or a student is failed (or lagging) to clear PLO at the time of graduation, the following are recommended corrective actions to overcome the deficiency:

- Attend workshop /tutorial session before graduation
- Submit a task/ any other recommendation by Department OBE Team.