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KEJURUTERAAN
KOMPUTER

PEMBINAAN HASIL PEMBELAJARAN (LO)
BERTERASKAN HASIL PROGRAM (PO) BAHARU
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1.0 PROGRAM OBJECTIVE STATEMENTS (PEO)

Specific goals consistent with the mission and vision of the IHL, are responsive to the expressed interest of programme stakeholders, and describe the expected achievement of graduates in their career and professional life a few years after graduation.

1.1 FKEKK's Current PEO

- i. To produce electronic engineers who are knowledgeable in the field of specialization.
- ii. To produce electronic engineers who are ethical in discharging duties, high moral values and responsible to the Creator, nation and society
- iii. To produce electronic engineers who are able to apply knowledge as well as capable of carrying out evaluation objectively based on facts, tests and researches
- iv. To produce electronic engineers who possess creativity to adapt and manipulate engineering principles for the purpose of research and development to meet the needs of the nation
- v. To produce electronic engineers who are competent, highly self-motivated and can communicate effectively.

1.2 FKEKK's New PEO

All our alumni are able to:

- i. Achieve career advancement and to pursue lifelong learning in related area of electronic engineering work or business.
- ii. Produce solutions to real electronic engineering problems that are practical and sustainable.
- iii. Display exemplary interpersonal and leadership skills.
- iv. Perform relevant duties ethically at the work place and contribute to the betterment of the society.

2.0 PROGRAM OUTCOME (PO)

Statement that describe what students are expected to know and be able to perform or attain by the time of graduation. These relate to the skills, knowledge, and behavior that students acquire through the programme.

2.1 FKEKK's Current PO

- i. Ability to apply knowledge of science, mathematics and electronic engineering.
- ii. Ability to apply in-depth technical competence in a specific electronic engineering discipline.
- iii. Ability to undertake problem identification, formulation and solution.
- iv. Ability to utilize systems approach to design and evaluate operational performance.
- v. Understanding of the principles of design for sustainable development.
- vi. Understanding of professional and ethical responsibilities and a commitment to them.
- vii. Ability to communicate effectively, not only with engineers but also with the community at large.
- viii. Ability to function effectively as an individual and in a group, with the capacity to be a leader and manager.
- ix. Understanding of the social, cultural, global and environmental responsibilities of a professional engineer.
- x. Recognition of the need to undertake life-long learning, as well as the capacity to do so.
- xi. Ability to identify business opportunities in related areas.

2.2 FKEKK's New PO are:

- i. Apply knowledge of mathematics, science, engineering and electronics fundamentals to solve complex engineering problems.
- ii. Undertake problem identifications, formulation and analysis of complex engineering problems.
- iii. Design systems, components, or processes to meet desired needs as well as analyze and interpret the results.
- iv. Investigate complex problems using research-based knowledge and research methods to provide valid conclusions.
- v. Apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities.
- vi. Assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
- vii. Understand the needs for sustainable development and the impact of engineering solutions on society and environment.
- viii. Apply ethical principles and commit to professional ethics, responsibilities and norms of engineering practice.
- ix. Communicate effectively on complex engineering activities with the engineering community and with society at large.

- x. Work effectively as a team member and leader in managing projects in a multidisciplinary environment.
- xi. Recognize the needs for, and ability to engage in independent and life-long learning as well as identify entrepreneurial and business opportunities in related areas.
- xii. Demonstrate knowledge and understanding of engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

3.0 2012 EAC's PO (Refer Manual EAC 2012)

- i. Engineering Knowledge - Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialisation to the solution of complex engineering problems;
- ii. Problem Analysis - Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;
- iii. Design/Development of Solutions - 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;
- iv. Investigation - Conduct investigation into complex problems using researchbased knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
- v. Modern Tool Usage - 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;
- vi. The Engineer and Society - Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice;
- vii. Environment and Sustainability - Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development;
- viii. Ethics - Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice;
- ix. Communication - Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;
- x. Individual and Team Work - Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings;
- xi. Life Long Learning - Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- xii. Project Management and Finance - Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments;

4.0 New PO Mapping with Current PO, Bloom Taxonomy Range and Soft Skills

Table 1 PO Mapping

New PO	New PO Statement	EAC Manual 2012	Current PO	Bloom Range	Soft Skills
PO1	Apply knowledge of mathematics, science, engineering and electronics fundamentals to solve complex engineering problems	Engineering Knowledge (PO1)	PO1	C3	K
PO 2	Undertake problem identifications, formulation and analysis of complex engineering problems	Problem Analysis (PO2)	PO3	C4	CTPS 3
PO 3	Design systems, components, or processes to meet desired needs as well as analyze and interpret the results	Design / Development of Solution (PO3)	PO4	C5	CTPS 4
PO 4	Investigate complex problems using research-based knowledge and research methods to provide valid conclusions	Investigation (PO4)	NA	C6	CTPS 5
PO 5	Apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities	Modern Tool Usage (PO5)	PO2	P4	TPS
PO 6	Assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice	The Engineer and Society (PO6)	PO9	A3	EM 2
PO 7	Understand the needs for sustainable development and the impact of engineering solutions on society and environment	Environment and Sustainability (PO7)	PO5	A3	EM 2
PO 8	Apply ethical principles and commit to professional ethics, responsibilities and norms of engineering practice	Ethics (PO8)	PO6	A3	EM 2
PO 9	Communicate effectively on complex engineering activities with the engineering community and with society at large	Communication (PO9)	PO7	A3	CS 4
PO 10	Work effectively as a team member and leader in managing projects in a multidisciplinary environment	Individual and Team Work (PO10)	PO8	A3	LS 2 /TS 3
PO 11	Recognize the needs for, and ability to engage in independent and life-long learning as well as identify entrepreneurial and business opportunities in related areas	Life-Long Learning (PO11)	PO10 & PO11	A3	LL 2/ES 1
PO 12	Demonstrate knowledge and understanding of engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments	Project Management and Finance (PO12)	PO8 (partially)	A1	LS 2/TS 3

Table 2 NEW PEO VERSUS NEW PO

	PO1 (K)	PO2 (CTPS)	PO3 (CTPS)	PO4 (CTPS)	PO5 (P)	PO6 (EM)	PO7 (EM)	PO8 (EM)	PO9 (CS)	PO10 (LS/TS)	PO11 (LL/ES)	PO12 (LS/TS)
PEO1	X										X	X
PEO2		X	X	X	X		X					
PEO3									X	X		
PEO4						X		X				

5.0 Person in Charge

Table 3 Subject and Person In Charge

No.	Subject Code	Subject Name	Person In Charger (PIC)
1	BENC 1133	Computer Programming	Muhammad Noorazlan Shah
2	BENC 1711	Electronic Fundamental Laboratory 1	Anuar
3	BENM 1143	Logic Circuits	Nur Fatihah
4	BENC 1721	Electronic Fundamental Laboratory 2	Muhammad Noorazlan Shah
5	BENM 2133	Digital Systems	Nur Alisa
6	BENC 2731	Electronic Engineering Laboratory 1	Nur Alisa
7	BENM 2123	Microprocessor Technology	Siti Aisyah
8	BENC 2741	Electronic Engineering Laboratory 2	Siti Aisyah
9	BENC 3123	Data Structure	Hamzah Asyrani
10	BENC 3751	Computer Engineering Laboratory 1	Hamzah Asyrani
11	BENM 3223	Microcontroller Technology	Dr Soo Yew Guan
12	BENC 3173	Computer System & Network	Vigneswara Rao
13	BENM 3133	IC Design & Process	Zul Atfyi Fauzan
14	BENC 3761	Computer Engineering Laboratory 2	Zul Atfyi Fauzan
15	BENC 4163	Embedded Software Design	Khairul Muzzammil
16	BENC 4113	Computer Organization & Architecture	Anuar
17	BENC 4133	Digital Signal Processing	Dr Low Yin Fen
18	BENC 4771	Computer Engineering Laboratory 3	Dr Low Yin Fen
19	BENC 4173	Multimedia Technology & Applications	Muhammad Noorazlan Shah
20	BENM4123	Digital IC Design	Anuar
21	BENC 4153	User Interface Programming & Design	Khairul Muzzammil / Lizawati
22	BENC 4781	Computer Engineering Laboratory 3	Ranjit Singh
23	BENC 2513	Digital Signal Processing Fundamentals	Nur Fatihah

6.0 Work Flow

The new mapping (Subject to PO) is actually divided into 3 PO Assessment phases. First phase will be for Semester 1 till Semester 4, Second phase for Semester 5 & 6 and final phase for Semester 7 & 8. From this assessment, every new 12 PO will be assessed frequently, and the result for each phase will help the department to do or take action based on the outcome (Continuous Quality improvement (CQI)) systematically.

Selected academic staffs need to reconstruct new synopsis, learning outcome and references (past 5 years) for the subject according to the new mapping of subject to Programme Outcomes (PO) as attached in Appendix.

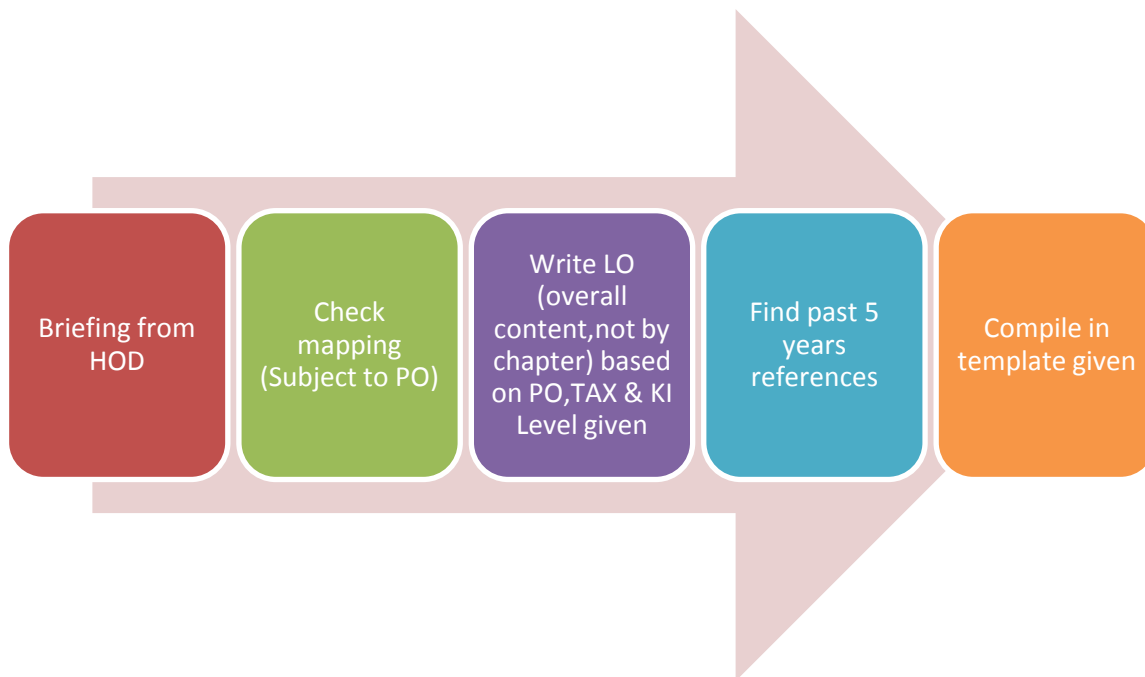


Figure 1 Work Flow for the Workshop

7.0 References

K	= Knowledge
CTPS	= Critical Thinking Problem Solving
P	= Practical
EM	= Ethic & Moral
CS	= Communication Skills
LS/TS	= Leadership and Teamwork Skills
LL	=Life Long Learning
ES	=Entrepreneurship Skills