IMPLEMENTATION OF OUTCOME-BASED EDUCATION

Workshop on Preparation for Outcome Based Accreditation
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presented by

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What is Outcomes-Based Education (OBE)

-A Shift in Focus

Programme structures & curricula are ***means, not ends.***

From a Resource- or Input-Based or Process-Based Approach to an Outcome-Based Approach

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What is Outcomes-Based Education (OBE)

- OBE is an educational process.
- Directed/focussed at achieving certain specified **outcomes** in terms of individual student learning.
- **Outcomes - key things students should understand and be able to do or the qualities they should develop.**
- Both structures and curricula are designed to achieve those capabilities or qualities (constructive alignment).
- Educational structures and **curriculum are regarded as means not ends.** If they do not do the job they are rethought (Continual Quality Improvement (CQI)).

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Some Real Benefits of OBE

- Anticipation of real benefits
  - More directed & coherent curriculum
  - Graduates will be more "relevant" to industry & other stakeholders (more well rounded graduates)
  - Continuous Quality Improvement (CQI) is an inevitable consequence

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Continual Quality Improvement (CQI)

- Everyone talks about quality
  - In what we obtain from others as consumers
  - In what we provide to others
- Rating/accreditation seeks to assess quality
- Quality: "fitness for purpose"
  - Not so easily measured in higher education
    - Many stakeholders
- All stakeholders must be comfortable that the graduates are suitably equipped for their roles

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DEFINING TERMS/GLOSSARY

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs are specific statements/goals consistent with the mission and vision of the IHL, are responsive to the expressed interest of programme stakeholders, and describe the expected achievements of graduates in their career and professional life a few (3 to 5) years after graduation.

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PROGRAMME OUTCOMES (POs)

POs 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 behaviour that students acquire through the programme.

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POs INDICATORS/ELEMENTS

Different abilities (breakdown) specified in a single outcome that would generally require different assessment measures.

- Notes: Some outcomes are broken down into separate elements, while for some the elements are literally extracted from the POs statement.

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COURSE OUTCOMES (COs)

Statements that describe observable student action that serves as evidence of knowledge, skills, and/or attitudes in a course.

- The statement must include an observable action verb (*explain, calculate, derive, design, critique,* …..) to qualify as outcomes.
- Additional learning objectives might be (and normally would be) defined by individual lecturer to reflect specific programme requirements and their own personal goals, but the outcome-related objectives should be invariant.

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ASSESSMENT

Processes that identify, collect, use and prepare data for evaluation of achievement of programme outcomes or educational objectives.

EVALUATION

Processes for interpretation of data and evidence from assessment practices that determine the program outcomes are achieved or result in actions to improve programme.

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DIRECT ASSESSMENT

Assessment of POs using exams, tests, quizzes, projects, presentations, simulations, interviews, team-working or life-long learning, or any other activities that can have direct assessments.

INDIRECT ASSESSMENT

Assessment of POs using perception based surveys such as through students exit surveys, etc.

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EXPLICIT ASSESSMENT

PO mark obtained using assessment directed specifically to it, where specific marking schemes/assessment rubrics have been used in producing its mark.

NON-EXPLICIT ASSESSMENT

PO mark obtained by inference/assumption from direct assessment that produced 'blended/mixed' mark for more than one PO (without clear marking scheme/assessment rubrics for each PO).

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DETERMINANT COURSE

Course that contributes to the final (upon graduation) in addition to every semester PO mark.

ENABLING COURSE

Course that contributes only to every semester PO mark. The course is not added/cumulative to the final (upon graduation) POs mark.

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CULMINATING COURSES

Courses that culminates many Programme Outcomes (POs) contributing to the final (upon graduation) cumulative POs marks.

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FORMATIVE ASSESSMENT

- Carried out during the duration of the course.
- Students getting feedback on performance for further improvement.
- Marks are not part of the final summative assessment.
- Lecturers improves Teaching & Learning (TnL) from assessment results.

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SUMMATIVE ASSESSMENTS

- To evaluate student learning at the end of the course.
- To demonstrate competency level.
- Examples of summative assessments include:
  - ✓ midterm exam.
  - ✓ final project.
  - ✓ Any quizzes or assignments, etc. with marks contributing to the final summative assessment.

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CONTINUOUS ASSESSMENTS

- The evaluation of a student's progress throughout a course of study, as distinct from by examination.
- Takes place during the course of learning.
- May involve multi-tasks such as projects, laboratories, etc.
- May be used to assess COs achieved at various stages in a course.

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OUTCOMES PERFORMANCE/ATTAINMENT TARGETS

The target set by the programme to indicate the performance/attainment of the outcomes (COs/POs) for CQI purposes.

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COURSE LEVEL CQI

Further development and improvement in terms of teaching & learning (curriculum/deliveries/assessments) introduced by academic staff in his/her own course resulting from Course Outcomes (COs) attainment results evaluation.

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PROGRAMME LEVEL CQI

Further development and improvement in terms of processes, facilities, budget, staffing, etc. initiated top-down by the management of programme resulting from a harmonised and holistic evaluation of the POs marks computed at the programme level.

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HARMONISED CQI

Assessment results/marks obtained from the courses (COs) related to the same PO are 'pooled' or 'harmonised' together to be analysed and evaluated to conclude steps to be taken for programme improvements.

HOLISTIC CQI

CQI actions at course and programme levels are 'big-picture' addressing improvements right to the root causes of problems.

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CONTINUAL CQI

CQI intervention plan executed based on COs or POs results obtained from few semesters, years, or cycles to improve the programme.

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WHAT IS THE EXPECTATION OF EVALUATORS?

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THE MAIN QUESTIONS

- Have the engineering courses been designed, taught, and assessed to equip students with the skills specified in the POs?
- Have the graduates achieved the Programme Outcomes/Graduate Attributes?
- Have the programme seriously used the COs/POs results for the programme improvement and CQI?

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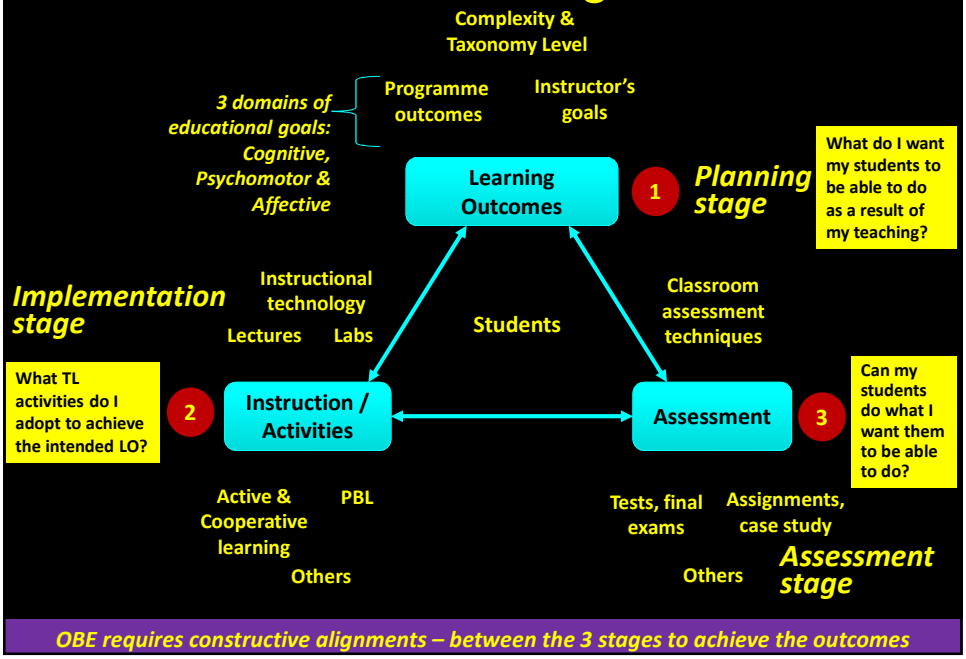
Constructive Alignment



CHALLENGES FOR PROGRAMMES

- To provide evidences that the COs/POs have been directly and explicitly assessed.
- To provide evidences that the assessment marks have been obtained via reliable and correct assessment tools.
- To ensure students' performance are as claimed during accreditation visit.
- To provide evidences that the results of evaluation of the COs/POs attainment has led to a harmonised and holistic continual programme improvement.

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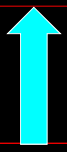
POs DELIVERY, ASSESSMENT AND EVALUATION MODEL

POs EVALUATION
(how do you evaluate the POs?)



POs ASSESSMENT
(how do you assess the POs?)

WHAT IS THE ADOPTED MODEL?

THE OBE MODEL

DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

1. Programme to define the POs indicators (POIs):

- ✓ The POIs are **different abilities (breakdown) specified in a single outcome that would generally require different assessment measures.**
- ✓ The POIs are very important to ensure all lecturers have the same understanding of the requirements of the POs and that they will deliver and assess the POs correctly.
- ✓ If not defined well, different lecturers may have different understanding of the requirements of the POs, thus leading to a non-consistent definition of the POs. Real achievement of POs cannot be reflected by the marks attained.

SAMPLE POIs

1. Canadian Engineering Accreditation Board (CEAB)
2. IHL1
3. IHL2

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DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

2a. Decide on the courses to POs mapping model:

- ✓ Choose the model for the mapping of courses to POs.
  - ❑ Which courses are to be selected to deliver and assess the POs?
    e.g. some may be enabling or determinant courses , culminating, slight emphasis, moderate or strong emphasis, etc.

- BAETE does not prescribe any specific model to be followed.
- Any logical model may be adopted.

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2b. Prepare courses to POs mapping matrix:

- ✓ Based on your adopted OBE model, the courses to POs mapping matrix is prepared. See some possible sample models in the following slides.

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SAMPLE POIs

1. IHL1
2. IHL2
3. IHL3
4. IHL4
5. IHL5
6. IHL6

Click here for Sample Table.

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DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

3a. Define a set of one or more outcome-related Course Outcomes (COs) for all courses.

- ✓ Follow guidelines of preparing good COs.

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SAMPLE COs - KKKH4283: Sustainable City Planning

KKKH4283: Sustainable City Planning

Course Outcomes (COs)

CO1	Able to explain basic principle of sustainable urban planning in Local Agenda 21 framework (C2)
CO2	Able to classify the centralised and poly centric city (C3)
CO3	Able to explain components and problems in sustainable urban planning and development (C2)
CO4	Able to propose a sustainable development plan of a traditional mid-size town (C6)
CO5	Able to present a proposed sustainable development plan of a traditional mid-size town (A4)

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DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

3b. Construct a course delivery and assessment matrix for all courses.

- ✓ Map the Course Outcomes (COs) to the:
  - (i) Taxonomy level (either cognitive, affective or psychomotor domain).
  - (ii) Programme Outcomes (POs).
    - ❖ One CO to one PO mapping (recommended – easier to manage), or
    - ❖ One CO to many PO mapping.
  - (iii) Delivery methods, and
  - (iv) Assessment methods.

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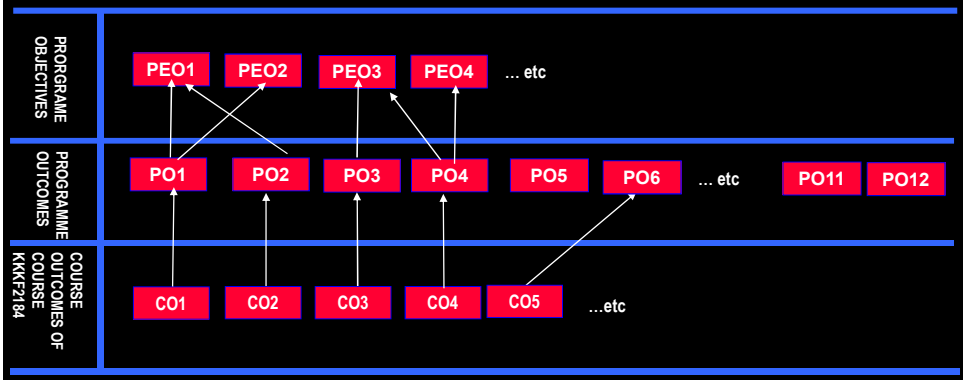
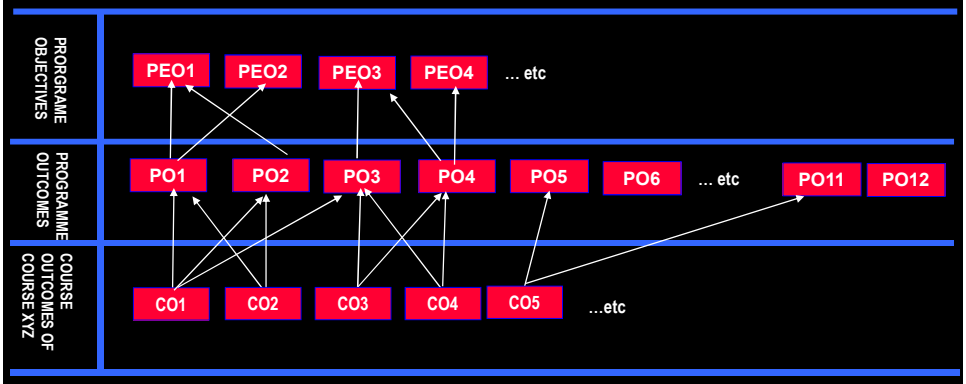
Course COs and POs Mapping Model – Sample Option 1



ONE CO TO ONE PO

Course COs and POs Mapping Model – Sample Option 2



ONE CO TO MANY POs (may be problematic if POs are not assessed explicitly)

DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

SAMPLE Course Delivery and Assessment Matrix - KKKH4283: Sustainable City Planning

Link to pdf doc.

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3c. Decide on the COs/POs assessment plan.

- Formative and summative assessment points for determinant/culminating courses.
  - ✓ Only marks from summative assessment points (questions in exams/quizzes/etc., tasks in projects) will be used in computing the COs/POs marks for the final graduation stage.
  - ✓ Marks from formative assessment points are not added to the COs/POs marks.

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DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

- All COs marks are summative used for PO assessment (MODEL A)
- Some COs marks are formative/delivered not summatively assessed (DNA) are used for PO assessment (MODEL B)

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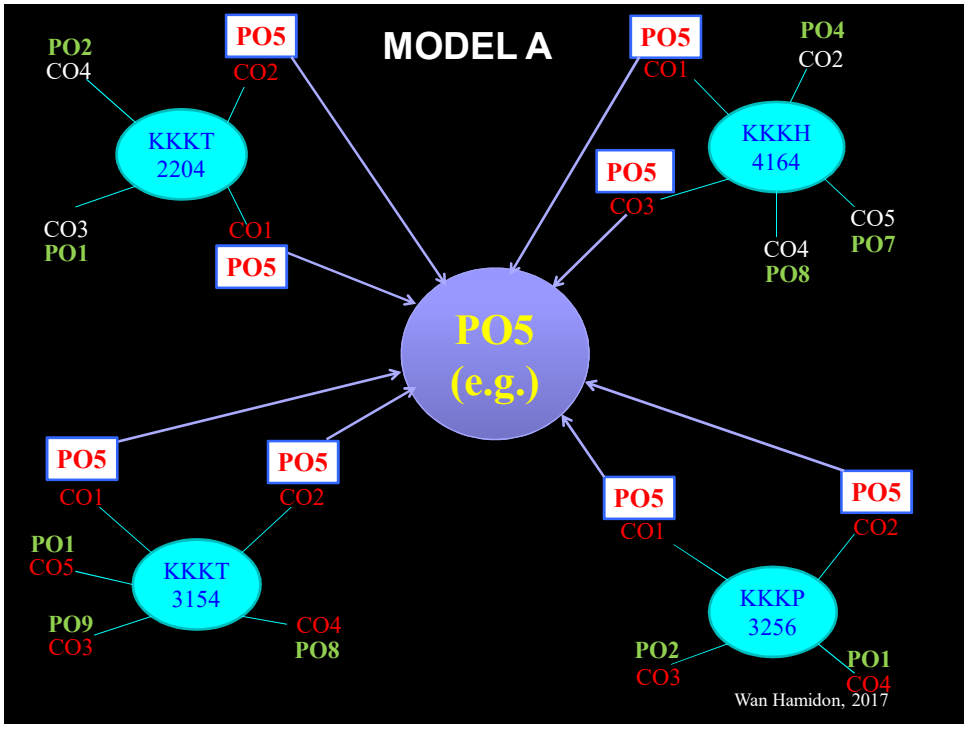
MODEL A
PO2
CO4
PO5
CO2
PO5
CO1
PO4
CO2
KKKT
2204
KKKH
4164
PO5
CO3
CO3
PO1
CO1
PO5
CO4
PO8
CO5
PO7
PO5
(e.g.)
PO5
CO1
PO5
CO2
PO5
CO1
PO5
CO2
PO1
CO5
KKKT
3154
KKKP
3256
PO9
CO3
CO4
PO8
PO2
CO3
PO1
CO4
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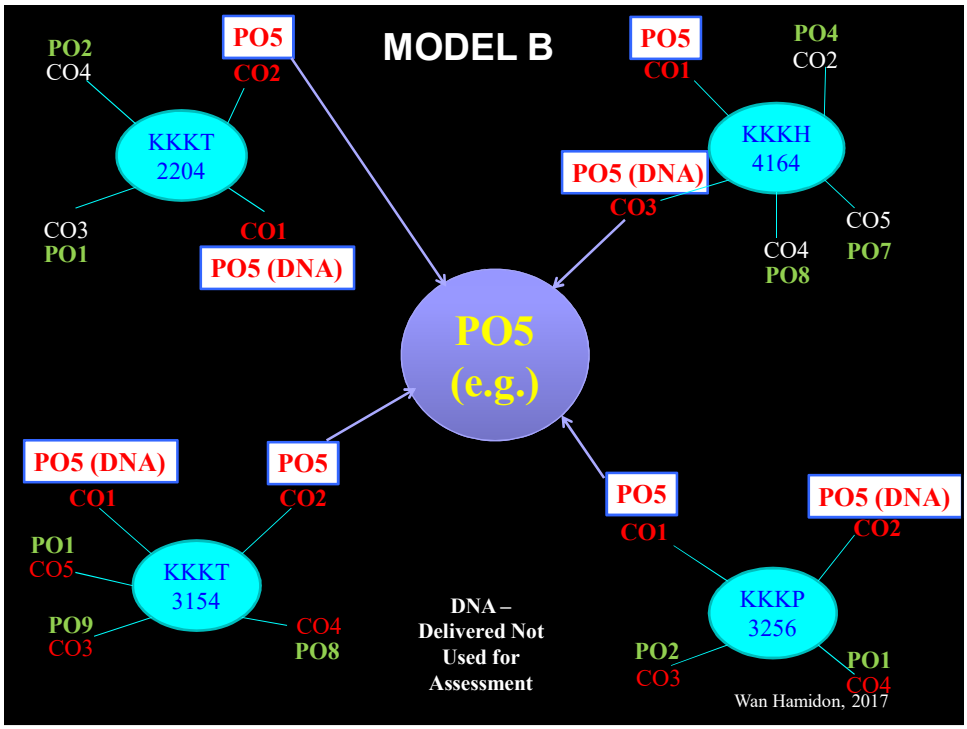
MODEL B
PO2
CO4
PO5
CO2
PO5
CO1
PO4
CO2
KKKT
2204
KKKH
4164
PO5 (DNA)
CO3
CO3
PO1
CO1
PO5 (DNA)
CO4
PO8
CO5
PO7
PO5
(e.g.)
PO5 (DNA)
CO1
PO5
CO2
PO5
CO1
PO5 (DNA)
CO2
PO1
CO5
KKKT
3154
KKKP
3256
PO9
CO3
CO4
PO8
DNA –
Delivered Not
Used for
Assessment
PO2
CO3
PO1
CO4
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DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

4. Execute the delivery and assessment plan.

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Course Assessment Plan

Program **SMKEJ(KA)** Sem : **1/2016-2017**

Subject KKKH3284						
Assessment		CO1	CO2	CO3	CO4	CO5
Tutorial 1	Q1	✓				
	Q2			✓		
	Q3	✓				
Quiz 1	Q1		✓	✓		
	Q2					
Mid-semester exam	Q1		✓			
	Q2				✓	
	Q3			✓		
Project Report		✓	✓	✓	✓	✓
Project Presentation						✓
Final exam	Q1	✓				
	Q2				✓	
	Q3			✓		

In this model, ALL assessment marks will be used for the assessment of all COs, hence all assessment points are determinant.

CO Assessment Raw Data

Program : SMKEJ(KA) Subjek KKKH3284 Sem : 1/2016-2017

Assessment	Tutorial 1			Quiz 1		Mid-Sem Exam			Project		Final Exam		
Ques. Num.	Q1	Q2	Q3	Q1	Q2	Q1	Q2	Q3	Report	Presentation	Q1	Q2	Q3
Full Marks	10	10	10	15	15	25	35	40	20	20	30	30	40
COs Num.	CO 1	CO 3	CO 1	CO 2	CO 3	CO 2	CO 4	CO 3	CO1-CO5	CO5	CO 1	CO 4	CO 3
Ali	8	10	7	12	15	10	10	15	16	18	25	25	35
Abu	9	9	8	14	14	20	13	10	15	17	24	25	34
Siti	5	7	10	14	10	15	15	12	17	19	23	27	38
Amin	10	6	5	10	12	15	14	12	13	15	24	25	25
Alia	5	5	10	9	10	10	10	12	10	12	20	20	23
Nurul	10	9	6	13	13	10	11	10	15	17	28	29	22
Bakar	7	5	5	10	9	10	10	10	11	16	20	14	30

**For CO assessment, lecturer must key in 'explicit' mark of each assessment for each student, since the model was chosen.

Sample CO Assessment Calculation (*per student)

Program SMKEJ(KA) Subjek : KKKH3284 1/2016-2017

Subject KKKH3284 – [Ali]							Overall Mark for CO (%)
Assessment		CO1	CO2	CO3	CO4	CO5	
Tutorial 1	Q1	8/10					**CO 1** : 45 / 54 x 100 = **81%**
	Q2			10/10			
	Q3	7/10					
Quiz 1	Q1		12/15				**CO2** : 26 / 44 x 100 = **57%**
	Q2			15/15			
Mid-Sem Exam	Q1		10/25				
	Q2				10/35		
	Q3			15/40			
Project Report		4/4	3/4	3/4	3/4	3/4	**CO3** : 79/ 109 x 100 = **72%**
Project Presentation						18/20	**CO4** : 39 / 69 x 100 = **55%**
Final Exam	Q1	25/30					**CO5** : 22 / 24 x 100 = **88%**
	Q2				25/30		
	Q3			35/40			

Graph >>

CO Marks

Program : SMKEJ(KA) Subjek : KKKH3284 Sem : 1/2016-2017

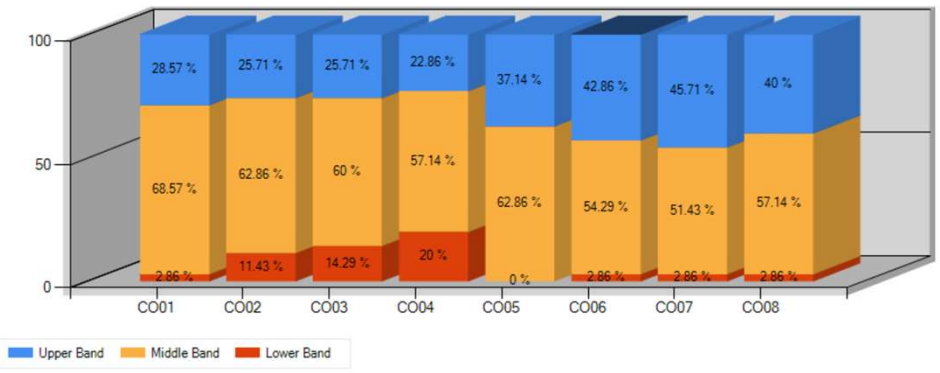
	CO1	CO2	CO3	CO4	CO5
Ali	81%	57%	72%	55%	88%
Abu	81%	84%	64%	59%	83%
Siti	78%	75%	64%	65%	92%
Amin	78%	64%	53%	59%	71%
Alia	69%	48%	48%	46%	58%
Nurul	87%	59%	52%	62%	83%
Bakar	63%	50%	51%	38%	79%

DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

5. Produce COs results based on selected model at the course level and set achievement target.

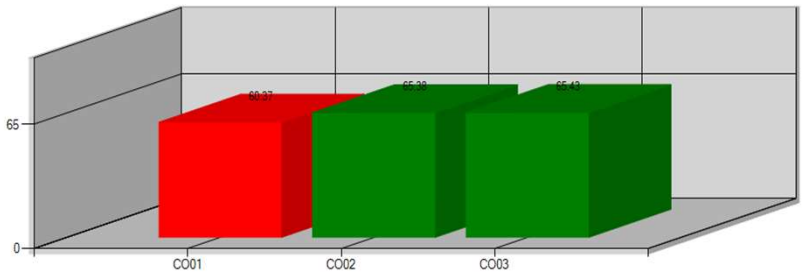
COs ACHIEVEMENT AND TARGET

CO achievement by a group of students in one semester for one course. Achievements have been categorised in 3 bands. Band-wise achievement ratio is visible through the separation of Upper, Middle and Lower Bands.



COs ACHIEVEMENT AND TARGET

Average CO achievement by a group of students in one semester for one course. Achievement target is set to 60%



DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

6. Produce POs results at programme level and set achievement target.
   - ➢ POs may be plotted for:
     - ✓ Every course.
     - ✓ Every semester (based on adopted model).
     - ✓ Final upon graduation.

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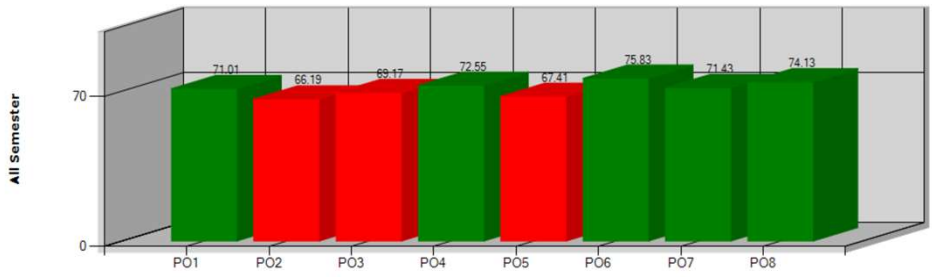
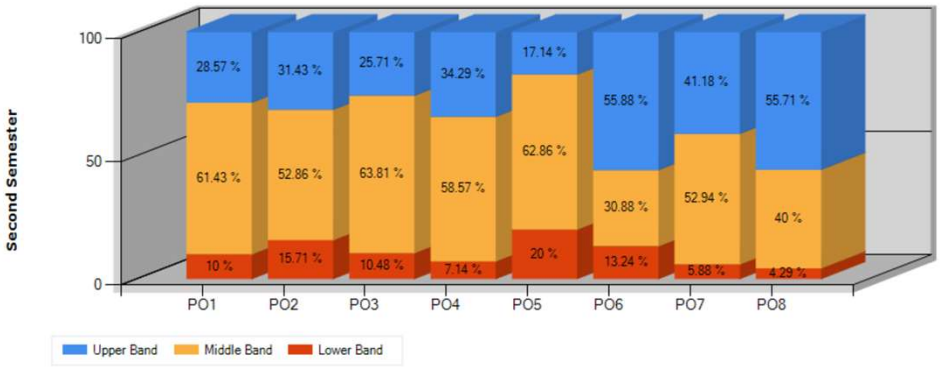
This is a average PO achievement of a group of students in all the semesters with a set achievement target of 70%.



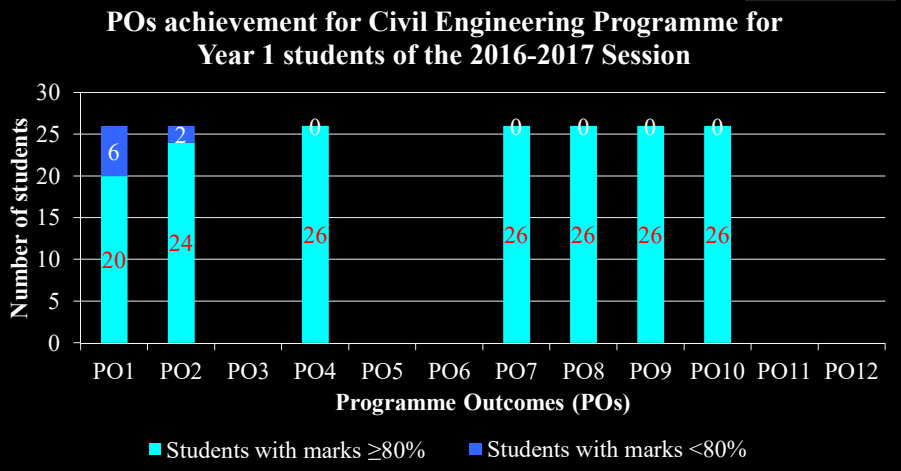
DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

PO achievement by a group of students in one semester. Achievements have been categorised in 3 bands. Band-wise achievement ratio is visible through the separation of Upper, Middle and Lower Bands.



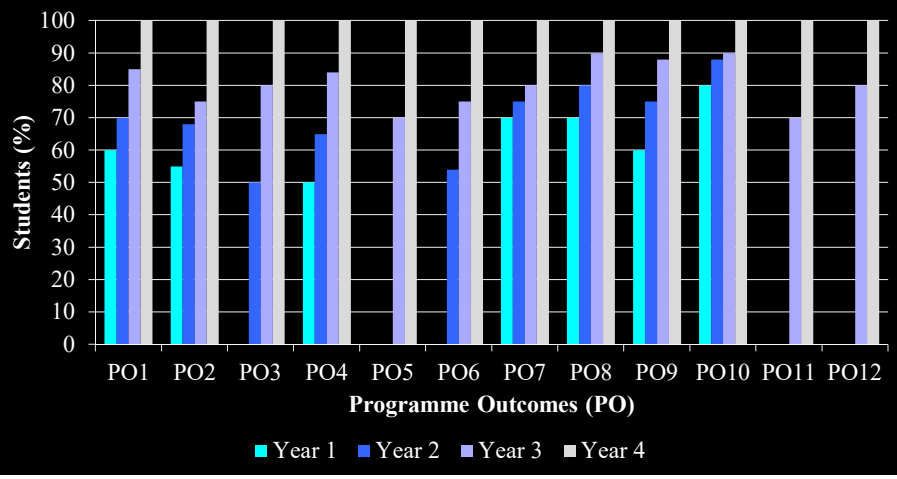
DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

Semester 2/2016-2017



DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

Graduating students POs achievement for the Civil Engineering Programme for the 2016-17 Session



DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

7. Produce PO spider web for every student and set achievement target.
   - ➢ PO spider web may be plotted for:
     - ✓ Every semester (based on adopted model).
     - ✓ Final upon graduation.

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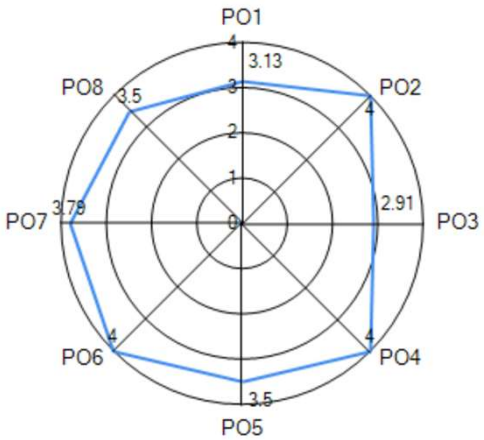
DESIGNING COURSES TO SATISFY OBE REQUIREMENTS



Spider web display of PO achievement of one student in a semester.

SAMPLE IMPLEMENTATION

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Sample Curriculum Matrix.

Code	Course	Courses to POs Mapping								Credit
		1	2	3	4	5	6	7	8	
PPPY1114	Maharat al-Qiraah	1	1			1				4
PPPY1224	Metodologi Dakwah		1	1	1					4
PPPY1254	Pengantar Qiraat dan Hafazan	1	1			1				4
PPPM1054	Kajian Budaya Etnik	1		1		1				4
ZZZT1114	Kursus Universiti 1			1			1	1		4
PPPM1024	Manusia dalam Al Quran	1		1	1					4
PPPM1044	Gerakan Misionari Kristian	1			1			1		4
PPPM1234	Kepimpinan Pengurusan Islam					1		1	1	4
PPPM2014	Ilmu Pidato dan Debat		1			1		1		4
ZZYY1212	Ko-kurikulum			1	1	1				2
PPPY2134	Maharat al-Kitabah	1				1	1			4
PPPY2164	Fiqh Ibadat dan Munakahat	1		1			1			4
PPPY2194	Akhlak dan Tasawuf	1			1		1			4
PPPY2264	Sejarah dan Tamadun Islam	1			1		1			4
ZZZT 2113	Kursus Universiti 2			1				1	1	3
PPPY2284	Kaedah Penyelidikan	1	1				1			4
PPPY2184	Akidah Islam	2		2	2					4
PPPM2024	Fiqh Muamalat dan Jinayat	2		2			2			4
PPPM3024	Kajian Teks Dakwah	1			1	1				4
ZZYY2213	Kursus Universiti 3					1		1	1	3
PPPM2316	Latihan Praktikal (12 minggu)		1	1	1					6
PPPM2084	Komunikasi Dakwah	2		2		2				4
PPPM2054	Penerbitan Dakwah Media Cetak		2			2			2	4
PPPM3324	Penerbitan Dakwah Media Elektronik	2	2						2	4
PPPM3136	Projek Khidmat Masyarakat			2	2		2		2	6
PPPM3102	Projek Ilmiah I		2				2	2		2
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		2			2	2			4
PPPM3344	Etika Komunikasi			2		2	2			4
PPPM3264	Keusahawanan dalam Islam					2		2	2	4
PPPM3106	Projek Ilmiah 2		2		2	2	2	2		6
		Jumlah Kredit								120

No.	POs
1	Knowledge.
2	Practical Skills.
3	Social Skills and Responsibility.
4	Values, Attitudes, and Professionalism.
5	Communication Skills, Leadership, and Teamwork.
6	Problem Solving and Scientific Thinking Skills.
7	Information Management and Lifelong Learning Skills.
8	Managerial and Entrepreneurial Skills.

Legend	
	No relationship
1	*Enabling*
2	*Determinant*

Sample Programme Assessment Plan

POs	Domain	Determinant Courses chosen for CO/PO assessment
1	Knowledge.	1. PPPM2024 Fiqh Muamalat dan Jinayat 2. PPPY2184 Akidah Islam 3. PPPM2084 Komunikasi Dakwah 4. PPPM3324 Penerbitan Dakwah Media Elektronik
2	Practical Skills.	1. PPPM2054 Penerbitan Dakwah Media Cetak 2. PPPM3324 Penerbitan Dakwah Media Elektronik 3. PPPM3102 Projek Ilmiah I 4. PPPJ3624 Sains,Teknologi dalam Tamadun Islam 5. PPPM3106 Projek Ilmiah 2
3	Social Skills and Responsibility.	1. PPPY2184 Akidah Islam 2. PPPM2024 Fiqh Muamalat dan Jinayat 3. PPPM2084 Komunikasi Dakwah 4. PPPM3136 Projek Khidmat Masyarakat 5. PPPM3344 Etika Komunikasi
4	Values, Attitudes, and Professionalism.	1. PPPY2184 Akidah Islam 2. PPPM3136 Projek Khidmat Masyarakat 3. PPPM3106 Projek Ilmiah 2
5	Communication Skills, Leadership, and Teamwork.	1. PPPM2084 Komunikasi Dakwah 2. PPPM2054 Penerbitan Dakwah Media Cetak 3. PPPJ3624 Sains,Teknologi dalam Tamadun Islam 4. PPPM3344 Etika Komunikasi 5. PPPM3264 Keusahawanan dalam Islam 6. PPPM3106 Projek Ilmiah 2
6	Problem Solving and Scientific Thinking Skills.	1. PPPM2024 Fiqh Muamalat dan Jinayat 2. PPPM3136 Projek Khidmat Masyarakat 3. PPPM3102 Projek Ilmiah I 4. PPPJ3624 Sains,Teknologi dalam Tamadun Islam 5. PPPM3344 Etika Komunikasi 6. PPPM3106 Projek Ilmiah 2
7	Information Management and Lifelong Learning Skills.	1. PPPM3102 Projek Ilmiah I 2. PPPM3264 Keusahawanan dalam Islam 3. PPPM3106 Projek Ilmiah 2
8	Managerial and Entrepreneurial Skills.	1. PPPM2054 Penerbitan Dakwah Media Cetak 2. PPPM3324 Penerbitan Dakwah Media Elektronik 3. PPPM3136 Projek Khidmat Masyarakat 4. PPPM3264 Keusahawanan dalam Islam

Sample Course Assessment Matrix.

PPPJ3624: Sains-Teknologi dalam Tamadun Islam Course Outcomes (COs)		Taxo-nomy Level	Program Outcomes (POs)*								Delivery Method	Assessment Method
			1	2	3	4	5	6	7	8		
1.	*Mengenal pasti masalah berdasarkan konsep dan falsafah ilmu sains dan teknologi dalam tamadun Islam.*	C3						2			Lecture	Mid-Sem Exam
2.	*Menganalisis dan membandingkan peringkat perkembangan ilmu sains dan teknologi dalam tamadun Islam.*	C5						2		Lecture	Lecture	Final Exam
3.	*Menghubung kait isu sains dan teknologi dalam tamadun Islam dengan isu kontemporari secara holistik dan kronologi.*	A4					2				Problem-Based Learning (PBL)	Project Report
4.	*Menjalankan pemerhatian kepada aplikasi sains dan teknologi dan menghubung kait dengan fenomena alam dan sekitaran.*	P5		2							Field Work	Field Work Report

*Legend: 1 = Enabler; 2 = Determinant

Sample Course Assessment Matrix.

No.	Programme Outcomes (POs) At the end of the course, students shall be able to:	Taxo-nomy	Indicator	Field			
				Field Work	Project	Mid-Sem Exam	Final Exam
1	*Mengenal pasti masalah berdasarkan konsep dan falsafah ilmu sains dan teknologi dalam tamadun Islam.*	6C3	• *Menghuraikan konsep.* • *Membincangkan falsafah.*			20	
2	*Menganalisis dan membandingkan peringkat perkembangan ilmu sains dan teknologi dalam tamadun Islam.*	6C5	• *Membahaskan peringkat perkembangan ilmu.* • *Membandingkan peringkat perkembangan ilmu.*				40
3	*Menghubung kait isu sains dan teknologi dalam tamadun Islam dengan isu kontemporari secara holistik dan kronologi.*	5A4	• *Membentangkan kajian kes.*		20		
4	*Menjalankan pemerhatian kepada aplikasi sains dan teknologi dan menghubung kait dengan fenomena alam dan sekitaran.*	2P5	• *Menjalankan cerapan astronomi.*	20			
	TOTAL			**20**	**20**	**20**	**40**

Sample Weightage Calculation

Code	Course	Course-PO Mapping								Credit (120)
		1	2	3	4	5	6	7	8	
PPPY1114	Maharat al-Qiraah	0.7	0.2			0.1				4
PPPY1224	Metodologi Dakwah		0.4	0.3	0.3					4
PPPY1254	Pengantar Qiraat dan Hafazan	0.6	0.2			0.2				4
PPPM1054	Kajian Budaya Etnik	0.6		0.2		0.2				4
ZZZT1114	Kursus Universiti 1			0.5			0.2	0.3		4
PPPM1024	Manusia dalam Al Quran	0.6		0.2	0.2					4
PPPM1044	Gerakan Misionari Kristian	0.6			0.2			0.2		4
PPPM1234	Kepimpinan Pengurusan Islam					0.5		0.2	0.3	4
PPPM2014	Ilmu Pidato dan Debat		0.3			0.5		0.2		4
ZZYY1212	Ko-kurikulum			0.3	0.2	0.5				2
PPPY2134	Maharat al-Kitabah	0.6				0.1	0.3			4
PPPY2164	Fiqh Ibadat dan Munakahat	0.7		0.1			0.2			4
PPPY2194	Akhlak dan Tasawuf	0.7			0.2		0.1			4
PPPY2264	Sejarah dan Tamadun Islam	0.6			0.2		0.2			4
ZZZT 2113	Kursus Universiti 2			0.4				0.4	0.2	3
PPPY2284	Kaedah Penyelidikan	0.5	0.2				0.3			4
PPPY2184	Akidah Islam	0.6		0.2	0.2					4
PPPM2024	Fiqh Muamalat dan Jinayat	0.6		0.2			0.2			4
PPPM3024	Kajian Teks Dakwah	0.5			0.2	0.3				4
ZZYY2213	Kursus Universiti 3					0.3		0.5	0.2	3
PPPM2316	Latihan Praktikal (12 minggu)		0.3	0.3	0.4					6
PPPM2084	Komunikasi Dakwah	0.5		0.2		0.3				4
PPPM2054	Penerbitan Dakwah Media Cetak		0.3			0.3			0.4	4
PPPM3324	Penerbitan Dakwah Media Elektronik	0.3	0.3						0.4	4
PPPM3136	Projek Khidmat Masyarakat			0.3	0.3		0.2		0.2	6
PPPM3102	Projek Ilmiah I		0.3				0.4	0.3		2
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		0.2			0.2	0.6			4
PPPM3344	Etika Komunikasi			0.2		0.5	0.3			4
PPPM3264	Keusahawanan dalam Islam					0.2		0.3	0.5	4
PPPM3106	Projek Ilmiah 2		0.2		0.2	0.2	0.2	0.2		6
Total Weightage-Credit		8.0	5.0	5.0	3.8	7.2	7.6	3.0	6.4	46.0

No.	POs
1	Knowledge.
2	Practical Skills.
3	Social Skills and Responsibility.
4	Values, Attitudes, and Professionalism.
5	Communication Skills, Leadership, and Teamwork.
6	Problem Solving and Scientific Thinking Skills.
7	Information Management and Lifelong Learning Skills.
8	Managerial and Entrepreneurial Skills.

Legend	
	No relationship
1	*Enabling*
2	*Determinant*

PO Weightage-Total Credit Calculation (e.g:: PO1):

(**0.6** PPPY2284 x **4** credit) + (**0.6** PPPM2024 x **4** credit) + (**0.5** PPPM2084 x **4** kredit) + (**0.3** PPPM3324 x **4** credit) = **8.0**

Sample Marks according to PO

Code	Course	Courses-PO Mapping								Credit (120)
		1	2	3	4	5	6	7	8	
PPPY1114	Maharat al-Qiraah	60	55			68				60
PPPY1224	Metodologi Dakwah		69	75	63					69
PPPY1254	Pengantar Qiraat dan Hafazan	71	62			60				67
PPPM1054	Kajian Budaya Etnik	70		63		65				68
ZZZT1114	Kursus Universiti 1			70			50	64		64
PPPM1024	Manusia dalam Al Quran	69		72	60					68
PPPM1044	Gerakan Misionari Kristian	72			65			69		70
PPPM1234	Kepimpinan Pengurusan Islam					70		80	73	73
PPPM2014	Ilmu Pidato dan Debat		78			84		70		79
ZZYY1212	Ko-kurikulum			60	58	77				68
PPPY2134	Maharat al-Kitabah	67				72	60			65
PPPY2164	Fiqh Ibadat dan Munakahat	79		72			80			79
PPPY2194	Akhlak dan Tasawuf	70			66		85			71
PPPY2264	Sejarah dan Tamadun Islam	85			63		76			79
ZZZT 2113	Kursus Universiti 2			74				78	65	74
PPPY2284	Kaedah Penyelidikan	75	60				66			69
PPPY2184	Akidah Islam	69		70	69					69
PPPM2024	Fiqh Muamalat dan Jinayat	86		75			80			83
PPPM3024	Kajian Teks Dakwah	69			62	74				69
ZZYY2213	Kursus Universiti 3					68		83	71	76
PPPM2316	Latihan Praktikal (12 minggu)		L	L	L					
PPPM2084	Komunikasi Dakwah	79		65		78				76
PPPM2054	Penerbitan Dakwah Media Cetak		68			65			60	64
PPPM3324	Penerbitan Dakwah Media Elektronik	71	72						76	73
PPPM3136	Projek Khidmat Masyarakat			69	55	60	76		80	67
PPPM3102	Projek Ilmiah I		73				90	78		80
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		70			65	86			79
PPPM3344	Etika Komunikasi			55		70	78			69
PPPM3264	Keusahawanan dalam Islam					72		66	84	76
PPPM3106	Projek Ilmiah 2		75		60	65	70	65		67
Total Weightage-Credit		8.0	5.0	5.0	3.8	7.2	7.6	3.0	6.4	46.0

No.	POs
1	Knowledge.
2	Practical Skills.
3	Social Skills and Responsibility.
4	Values, Attitudes, and Professionalism.
5	Communication Skills, Leadership, and Teamwork.
6	Problem Solving and Scientific Thinking Skills.
7	Information Management and Lifelong Learning Skills.
8	Managerial and Entrepreneurial Skills.

Legend	
	No relationship
1	*Enabling*
2	*Determinant*

Sample PO Weightage-Credit (e.g.: HPP 1):

(**0.7** PPPY1184 x **4** credit) + (**0.7** PPPM2084 x **4** credit) + (**0.6** PPPM3324 x **4** credit) = **8.0**

Sample Grade According to Cos/POs

Code	Course	Course-PO Mapping								Mark/ Gade	
		1	2	3	4	5	6	7	8		
PPPY1114	Maharat al-Qiraah	B-	C+			B				60	B-
PPPY1224	Metodologi Dakwah		B	A-	B-					69	B
PPPY1254	Pengantar Qiraat dan Hafazan	B+	B-			B-				67	B
PPPM1054	Kajian Budaya Etnik	B+		B-		B				68	B
ZZZT1114	Kursus Universiti 1			B+			C	B-		64	B-
PPPM1024	Manusia dalam Al Quran	B		B+	B-					68	B
PPPM1044	Gerakan Misionari Kristian	B+			B			B		70	B+
PPPM1234	Kepimpinan Pengurusan Islam					B+		A	B+	73	B+
PPPM2014	Ilmu Pidato dan Debat		A-			A		B+		79	A-
ZZYY1212	Ko-kurikulum			B-	C+	A-				68	B
PPPY2134	Maharat al-Kitabah	B				B+	B-			65	B
PPPY2164	Fiqh Ibadat dan Munakahat	A-		B+			A			79	A-
PPPY2194	Akhlak dan Tasawuf	B+			B		A			71	B+
PPPY2264	Sejarah dan Tamadun Islam	A			B-		A-			79	A-
ZZZT 2113	Kursus Universiti 2			B+				A-	B	74	B+
PPPY2284	Kaedah Penyelidikan	A-	B-				B			69	B
PPPY2184	Akidah Islam	B		B+	B					69	B
PPPM2024	Fiqh Muamalat dan Jinayat	A		A-			A			83	A
PPPM3024	Kajian Teks Dakwah	B			B-	B+				69	B
ZZYY2213	Kursus Universiti 3					B		A	B+	76	A-
PPPM2316	Latihan Praktikal (12 minggu)		L	L	L						
PPPM2084	Komunikasi Dakwah	A-		B		A-				76	A-
PPPM2054	Penerbitan Dakwah Media Cetak		B			B			B-	64	B-
PPPM3324	Penerbitan Dakwah Media Elektronik	B+	B+						A-	73	B+
PPPM3136	Projek Khidmat Masyarakat			B	C+	B-	A-		A	67	B
PPPM3102	Projek Ilmiah I		B+				A	A-		80	A
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		B+			B	A			79	A-
PPPM3344	Etika Komunikasi			C+		B+	A-			69	B
PPPM3264	Keusahawanan dalam Islam					B+		B	A	76	A-
PPPM3106	Projek Ilmiah 2		A-		B-	B	B+	B		67	B
CGPA		3.52	3.33	3.05	2.58	3.24	3.79	3.13	3.59		

No.	POs
1	Knowledge.
2	Practical Skills.
3	Social Skills and Responsibility.
4	Values, Attitudes, and Professionalism.
5	Communication Skills, Leadership, and Teamwork.
6	Problem Solving and Scientific Thinking Skills.
7	Information Management and Lifelong Learning Skills.
8	Managerial and Entrepreneurial Skills.

Legend	
	No relationship
1	*Enabling*
2	*Determinant*

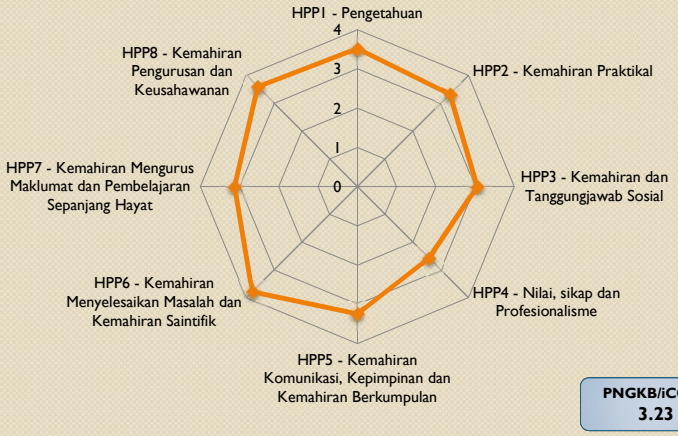
CGPA 3.23

Mark-Grade Scale:

80-100 = A	55-59 = C+
75-79 = A-	50-54 = C
70-74 = B+	47-49 = C-
65-69 = B	44-46 = D+
60-64 = B-	40-43 = D

Student Score Card (Individual)

PNGK Bersepadu dan Mengikut Domain HPP



PNGKB/iCGPA 3.23

Contoh Kad Skor Pelajar (mengikut Semester)

Kod	Kursus	Hubungan HPP dengan Kursus								Gred
		1	2	3	4	5	6	7	8	
PPPY1114	Maharat al-Qiraah	B-	C+			B				B-
PPPY1224	Metodologi Dakwah		B	A-	B-					B
PPPY1254	Pengantar Qiraat dan Hafazan	B+	B-			B-				B
PPPM1054	Kajian Budaya Etnik	B+		B-		B				B
ZZZT1114	Kursus Universiti 1			B+			C	B-		B-
PPPM1024	Manusia dalam Al Quran	B		B+	B-					B
PPPM1044	Gerakan Misionari Kristian	B+			B			B		B+
PPPM1234	Kepimpinan Pengurusan Islam					B+		A	B+	B+
PPPM2014	Ilmu Pidato dan Debat		A-			A		B+		A-
ZZYY1212	Ko-kurikulum			B-	C+	A-				B
PPPY2134	Maharat al-Kitabah	B				B+	B-			B
PPPY2164	Fiqh Ibadat dan Munakahat	A-		B+			A			A-
PPPY2194	Akhlak dan Tasawuf	B+			B		A			B+
PPPY2264	Sejarah dan Tamadun Islam	A			B-		A-			A-
ZZZT 2113	Kursus Universiti 2			B+				A-	B	B+
PPPY2284	Kaedah Penyelidikan	A-	B-				B			B
PPPY2184	Akidah Islam	B		B+	B					B
PPPM2024	Fiqh Muamalat dan Jinayat	A		A-			A			A
PPPM3024	Kajian Teks Dakwah	B			B-	B+				B
ZZYY2213	Kursus Universiti 3					B		A	B+	A-
PPPM2316	Latihan Praktikal (12 minggu)		L	L	L					
PPPM2084	Komunikasi Dakwah	A-		B		A-				A-
PPPM2054	Penerbitan Dakwah Media Cetak		B			B			B-	B-
PPPM3324	Penerbitan Dakwah Media Elektronik	B+	B+						A-	B+
PPPM3136	Projek Khidmat Masyarakat			B	C+	B-	A-		A	B
PPPM3102	Projek Ilmiah I		B+				A	A-		A
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		B+			B	A			A-
PPPM3344	Etika Komunikasi			C+		B+	A-			B
PPPM3264	Keusahawanan dalam Islam					B+		B	A	A-
PPPM3106	Projek Ilmiah 2		A-		B-	B	B+	B		B
Nilai Mata Setara		3.52	3.33	3.05	2.58	3.24	3.79	3.13	3.59	

PNGSB | PNGKB
2.87 | 2.87

PNGSB | PNGKB
3.30 | 3.07

PNGSB | PNGKB
3.40 | 3.18

PNGSB | PNGKB
3.32 | 3.22

PNGSB | PNGKB
3.23 | 3.22

PNGSB | PNGKB
3.30 | 3.23

DESIGNING COURSES TO SATISFY OBE REQUIREMENTS

8. Results used for further development and improvements both at course and programme levels.

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Acknowledgement

- Prof. Dr. Shahrin, UTM.
- Prof. Dr. Shahrir, UKM.
- Quality Assurance Centre, UKM.
- Department of Civil & Structural Engineering, UKM.

Sample 1 of Courses to POs Matrix

		Emphasis to the PO										
Code	Course	1	2	3	4	5	6	7	8	9	10	11
KF1133	Introduction to Engineering	3										1
KF1153	Material Sciences	3										
KF1173	Engineering Graphics	3	3									
KF1193	Ordinary Differential Equations	3		3			2					
ZT1012	Islamic Civilisation & Malaysian Studies I							3				
KF1043	Basic Applied Mechanics	3		2						2		
KF1063	Introduction to Electrical Engineering	3										
KF1083	Introduction to Thermodynamics	3										
KF1223	Linear Algebra & Vector Calculus	3			3		2					
KF1243	Computer Programming	3										
KF1131	Engineering Applications	3										
VH2073	English for Engineering		3									
KF2033	Engineering Statistics	3										
KH2123	Strength of Materials	3		2	2							
KH2133	Fluid Mechanics	3										
KH2173	Introduction to Environmental Engineering	3	2	2	2	3	2	3	3	3	1	3
KF2043	Complex Analysis & Partial Differential Eq	3										
KH2243	Engineering Survey	3			2		2					

1 = CO address CO slightly , 2 = moderately 3 = substantive

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Sample 2 of Courses to POs Matrix

Course		Programme Outcomes (POs)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Year 1	KKKF1124	/						/	/		/		
	KKKF1102	/	/		/					/			
Year 2	KKKH1204	/					/		/	/			
	KKKP1234	/	/				/	/			/		
	KKKH2134	/	/		/						/		
	KKKF2184	/	/	/	/		/						
Year 3	KKKT2204	/	/	/		/					/	/	
	KKKW2112		/	/			/	/	/	/	/		/
	KKKT3154	/	/	/	/	/	/	/				/	/
	KKKP3256	/		/	/	/		/					
Year 4	KKKF4124			/	/		/	/	/	/	/		/

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Sample 3 of Courses to POs Matrix

Course		Programme Outcomes (POs)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Year 1	KKKF1124	1C1						7C2	8A3		10A3		
	KKKF1102	1C2	2C3		4C2					9PW1			
Year 2	KKKH1204	1C3					6C1		8A3	9PV1			
	KKKP1234	1C4	2C2				6C3	7C3			10A3		
	KKKH2134	1C3	2C2		4C2						10C1		
	KKKF2184	1C2	2C4	3C4	4C1		6C3						
Year 3	KKKT2204	1C4	2C5	3C3		5P2					10A3	11A3	
	KKKW2112		2C1	3C6			6C2	7C5	8A3	9PV2	10A3		12C4
	KKKT3154	1C5	2C6	3C4	4C4	5P5	6C4	7C2				11A2	12C5
	KKKP3256	1C4		3C5	4C5	5P4		7C4					
Year 4	KKKF4124		2C5	3C4	4C2		6C5	7C4	8A1	9PW2	10A3		12C1

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Sample 4 of Courses to POs Matrix

CORE COURSES OFFERED (based on year and semester)				PROGRAMME OUTCOMES									
				Ability to acquire knowledge of science and civil engineering principles.	Ability to use the techniques, skills and modern civil engineering tools.	Ability to analyse, interpret, develop and conduct experiments, and design components, systems,or processes.	Ability to think critically, identify, formulate and solve civil engineering related problems.	Ability to communicate effectively and with confidence.	Ability to identify business opportunities and embark on entrepreneurship.	Ability to function effectively as an individual in a team to achieve common goals	Ability to perpetually seek and acquire contemporary knowledge.	Ability to lead, communicate and manage effectively with confidence	Ability to apply high ethical standards in professional practice and social interactions for sustainable development.
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
YEAR 1	S1	SAB 1011	Engineering Survey – Fieldwork	b	a	a	2	1	-	2	-	2	2
		SAB 1023	Engineering Survey	a	a	b	2	2	-	-	-	-	2
		SAB 1713	Soil Mechanics	a	b	b	2	1	-	1	2	2	2
		SSE 1792	Calculus	a	-	a	1	-	-	-	2	-	2
		SSE 1893	Engineering Mathematics	a	-	a	1	-	-	-	2	-	2
		UHB 1412	English for Academic Communications	-	-	-	-	1	-	1	1	2	2
		ULT 1022	Islamic and South East Asian Civilisation	-	-	-	-	1	-	-	-	-	1
	S2	SAB 1042	Civil Engineering Laboratory I	a	a	a	2	1	-	1	2	2	2
		SAB 1213	Applied Mechanics	a	b	b	1	2	2	2	2	2	2
		SAB 1423	Civil Engineering Drawing	a	a	b	-	2	-	2	2	2	1
		SAB 1513	Fluid Mechanics	a	a	a	1	2	-	2	2	2	2
		SSE 1793	Differential Equations	a	-	a	1	-	-	-	2	-	2
		UQ 1##1	Co-curriculum	-	-	-	-	1	-	1	2	1	2
	S3	SAB 1031	Survey Camp	b	a	a	2	2	-	1	2	1	2

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Sample 5 of Courses to POs Matrix

Mapping of Core Courses to Program Outcomes (PO), Complex Problems (CP), Complex Activities (CA) and Knowledge Profiles (KP)

	CORE COURSES OFFERED		Program Outcomes										Complex Problems								Complex Activities					Knowledge Profiles							
			Acquire Knowledge	Analysis and Tool	Design	Investigation and Research	Communication	Financial and Project Management	Team Work	Life Long Learning	Entrepreneurial and Leadership	Sustainability and Ethical	Range of conflicting	Depth of analysis	Depth of knowledge	Familiarity of issues	Extent of applicable codes	Extent of stakeholder involvement	Consequences	Interdependence	Range of resources	Level of interaction	Innovation	Consequences to society and the environment	Familiarity	Theory-based natural sciences	Conceptually-based mathematics	Engineering fundamentals	Engineering specialist knowledge	Engineering design	Engineering practice (technology)	Role of engineering in society	Research literature
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	CP 1	CP 2	CP 3	CP 4	CP 5	CP 6	CP 7	CP 8	CA 1	CA 2	CA 3	CA 4	CA 5	KP 1	KP 2	KP 3	KP 4	KP 5	KP 6	KP 7	KP 8
1	SKAA 1012	Introduction to Civil Engineering	1	2			2		2																			×					
2	SKAA 1023	Engineering Surveying	1	2	2					2			×								×										×		
3	SKAA 1422	Civil Engineering Drawing	2	1								2																		×			
4	SKAA 1213	Engineering Mechanics	1						2					×									×			×	×						
5	SKAA 1513	Fluid Mechanics	1			2										×						×				×		×		×			
6	SKAA 1713	Soil Mechanics	1				2						×								×					×	×						
7	SKAA 1031	Survey Camp	2	1	2		2		1		1		×								×										1		
8	SKAA 2012	Civil Engineering Laboratory I		1					1						×		×								×	×		×		×			
9	SKAA 2032	Mechanical & Electrical Systems	2	1								2																					
10	SKAA 2112	Civil Engineering Materials	1							2																×							
11	SKAA 2223	Mechanics of Materials & Structures	2	1		2								×								×				×							
12	SKAA 2513	Hydraulics		1		2								×								×						×		×			
13	SKAA 2712	Eng. Geology & Rock Mechanics	1	2	2	2							×		×	×		×															
14	SKAA 2722	Geotechnics I		1		2							×														×	×					
15	SKAA 2832	Highway Engineering		1						2			×	×			×												×				
16	SKAA 2912	Water Treatment	2	1	2					2						×					×								×				
17	SKAA 2922	Waste Water Engineering	2		1					2				×							×					×				×			
18	SKAA 3012 SAB 3011	Civil Eng. Laboratory II / Civil Eng. Laboratory III		1		2									×										×	×		×		×			
19	SKAA 3021	Integrated Design Project 1	2		1	2			1				×							×	×	×			×				×	×	×		
20	SKAA 3031	Integrated Design Project 2	2		1	2			1				×							×	×	×			×				×				
21	SKAA 3045 SAB 3045	Industrial Training	2			2	2		1			1	×				×	×				×											
22	SKAA 3122 SAB 3122	Construction Technology & Estim. Construction Technology	1	2						1		2	×									×									1		
23	SKAA 3233 SAB 3233	Structural Steel & Timber Design			1				1					×	×										×			×	×				

Sample 6 of Courses to POs Matrix

Code	Course	Courses to POs Mapping								Credit
		1	2	3	4	5	6	7	8	
PPPY1114	Maharat al-Qiraah	1	1			1				4
PPPY1224	Metodologi Dakwah		1	1	1					4
PPPY1254	Pengantar Qiraat dan Hafazan	1	1			1				4
PPPM1054	Kajian Budaya Etnik	1		1		1				4
ZZZT1114	Kursus Universiti 1			1			1	1		4
PPPM1024	Manusia dalam Al Quran	1		1	1					4
PPPM1044	Gerakan Misionari Kristian	1			1			1		4
PPPM1234	Kepimpinan Pengurusan Islam					1		1	1	4
PPPM2014	Ilmu Pidato dan Debat		1			1		1		4
ZZYY1212	Ko-kurikulum			1	1	1				2
PPPY2134	Maharat al-Kitabah	1				1	1			4
PPPY2164	Fiqh Ibadat dan Munakahat	1		1			1			4
PPPY2194	Akhlak dan Tasawuf	1			1		1			4
PPPY2264	Sejarah dan Tamadun Islam	1			1		1			4
ZZZT 2113	Kursus Universiti 2			1				1	1	3
PPPY2284	Kaedah Penyelidikan	1	1				1			4
PPPY2184	Akidah Islam	2		2	2					4
PPPM2024	Fiqh Muamalat dan Jinayat	2		2			2			4
PPPM3024	Kajian Teks Dakwah	1			1	1				4
ZZYY2213	Kursus Universiti 3					1		1	1	3
PPPM2316	Latihan Praktikal (12 minggu)		1	1	1					6
PPPM2084	Komunikasi Dakwah	2		2		2				4
PPPM2054	Penerbitan Dakwah Media Cetak		2			2			2	4
PPPM3324	Penerbitan Dakwah Media Elektronik	2	2						2	4
PPPM3136	Projek Khidmat Masyarakat			2	2		2		2	6
PPPM3102	Projek Ilmiah I		2				2	2		2
PPPJ3624	Sains,Teknologi dalam Tamadun Islam		2			2	2			4
PPPM3344	Etika Komunikasi			2		2	2			4
PPPM3264	Keusahawanan dalam Islam					2		2	2	4
PPPM3106	Projek Ilmiah 2		2		2	2	2	2		6
		Jumlah Kredit								120

No.	POs
1	Knowledge.
2	Practical Skills.
3	Social Skills and Responsibility.
4	Values, Attitudes, and Professionalism.
5	Communication Skills, Leadership, and Teamwork.
6	Problem Solving and Scientific Thinking Skills.
7	Information Management and Lifelong Learning Skills.
8	Managerial and Entrepreneurial Skills.

Legend	
	No relationship
1	*Enabling*
2	*Determinant*

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