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UNIVERSITI TEKNOLOGI MALAYSIA
Faculty of
Civil Engineering

"Inspiring creative and innovative minds"


Closing the Loop (Continuous Quality Improvement – CQI)

Prof Dr Shahrin Mohammad


23h Oct 2010



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About Myself



- Head Computer Lab 1988 – 1990
- Head of Dept (Structures and Materials) 1997 – 1998
- IT Manager 1998 - 2001
- Deputy Dean (Academic) 2001-2005
- Quality Mgt Rep ISO 9001:2000 2001-2005
- Academic Quality Director of UTM 2005-2007
- Deputy Dean (Academic) 2008-2009
- Dean Faculty of Civil Eng 2009- present**
- Certified ISO 9001:2000 Lead Auditor,
- Facilitator/Trainer ISO 9001:2000, Internal Auditor
- Engineering Accreditation Council Panel of Trainers
- Ministry of Higher Education - facilitator on MQF Credit System
- Facilitator/Trainer on Outcome based Approach
- Facilitator/Trainer on Quality Assurance for Academic Programme
- Facilitator/Trainer on Academic Auditing
- Secretary Academic Performance Audit Panel MQA**
- Associate Director for Engineering Accreditation Dept**

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Begins with the end in mind

What are the expected outcomes/results of this workshop?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

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Learning Outcomes

At the end of the workshop you are able to;

- Explain what and why CQI
- Describe some best practices in implementing CQI
- Identify current status of CQI at UTeM
- Initiate the strategies and action plan to close the gaps to improve the current status



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Introduction



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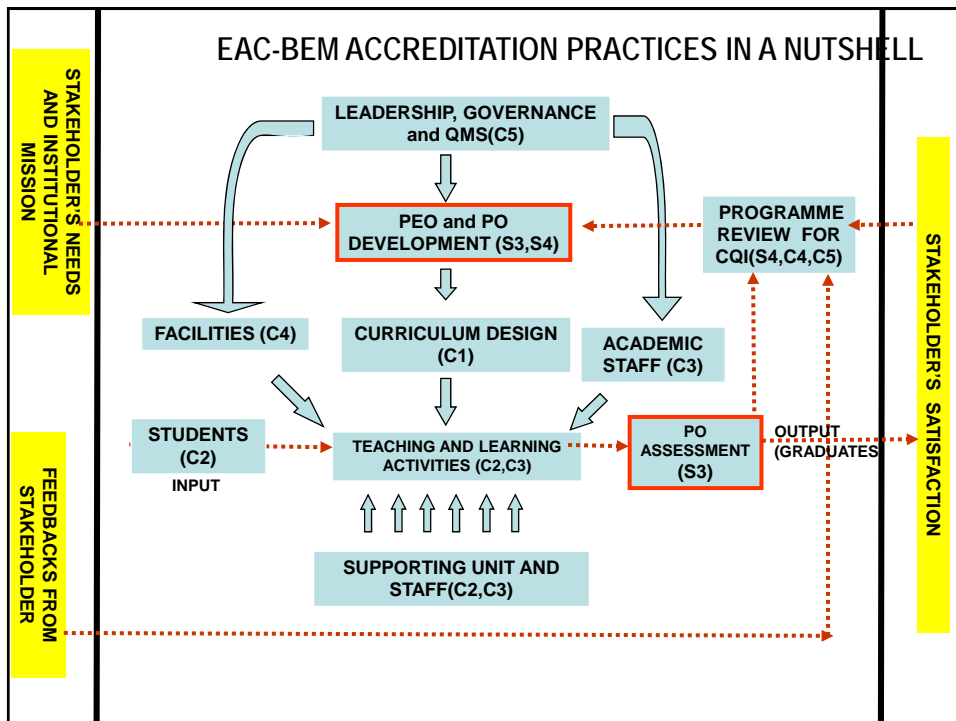
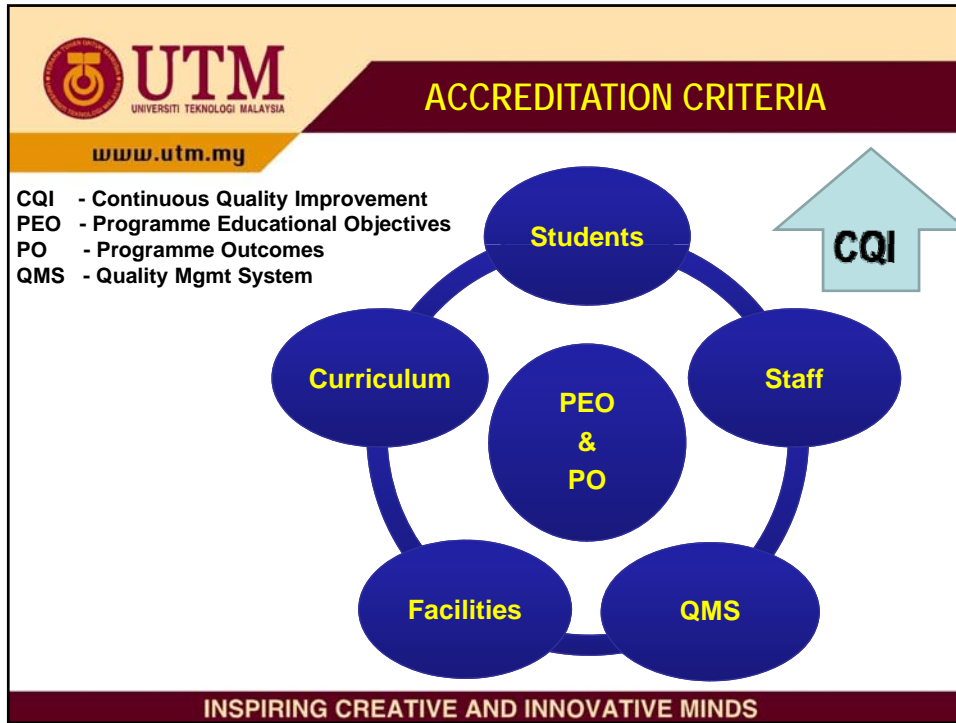
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2009 : MALAYSIA AS A MEMBER OF THE
WASHINGTON ACCORD

An endorsement that the engineering education system has demonstrated a **strong, long-term commitment to quality assurance** in producing engineers ready for industry practice in the international scene.

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Focus

- Engineering education **content and level** are maintained
- Programme Continual Quality Improvement (**COI**)
- Outcome-based Engineering Education (**OBE**) Programme
- Systematic (**QMS**)

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What is CQI ?

- The culture, strategies and methods necessary for continual improvement in meeting and exceeding customers' expectations. (www.european-quality.co.uk/index.php)
- A management approach to improving and maintaining quality that emphasizes internally driven and relatively continuous assessments of potential causes of quality defects, followed by action aimed either at avoiding decrease in quality or else correcting it an early stage. www.qaproject.org/methods/resglossary.html

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What is CQI ?

The systematic pursuit of excellence and satisfaction of the needs of stakeholders, in a dynamic and competitive environment

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Facts on CQI

- exists only when it is done systematically
- is a dynamic behavior of an organization
- does NOT result from external factors
- can NOT be achieved in isolation
- exists when the continuous pursuit of excellence motivates and guides the philosophies, planning, policies and processes of the organization
- Focus of CQI in education is NOT on the curriculum
- **Foundation of CQI is Assessment**

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Facts on CQI

- Quality improvement comes from within an institution
- Continuous improvement requires integration of defined objectives, performance metrics, & regular assessment
- Continuous improvement is cyclical. Assessment of performance is the baseline for future assessment
- Essential to synchronize educational objectives, mission of IHL and needs of stakeholders to achieve CQI
- CQI can be proven through well documented report and data.

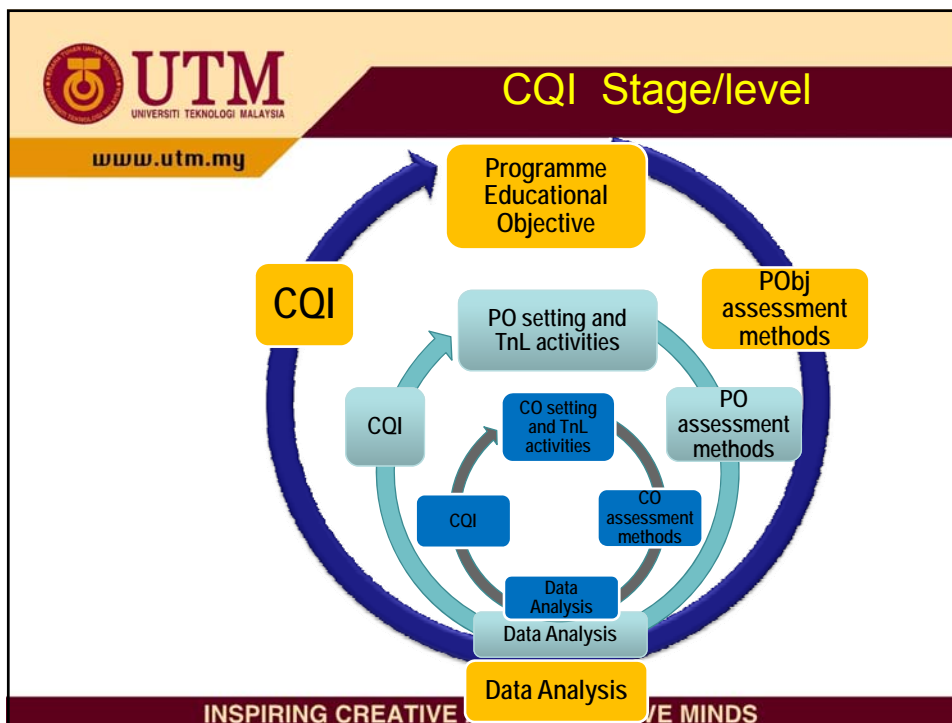
INSPIRING CREATIVE AND INNOVATIVE MINDS

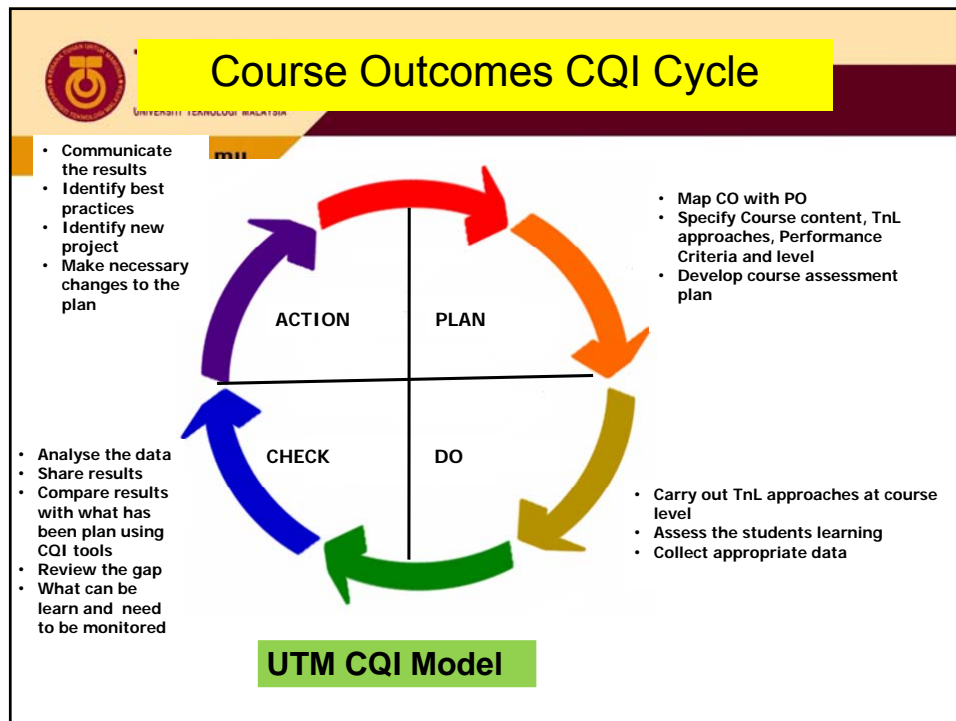
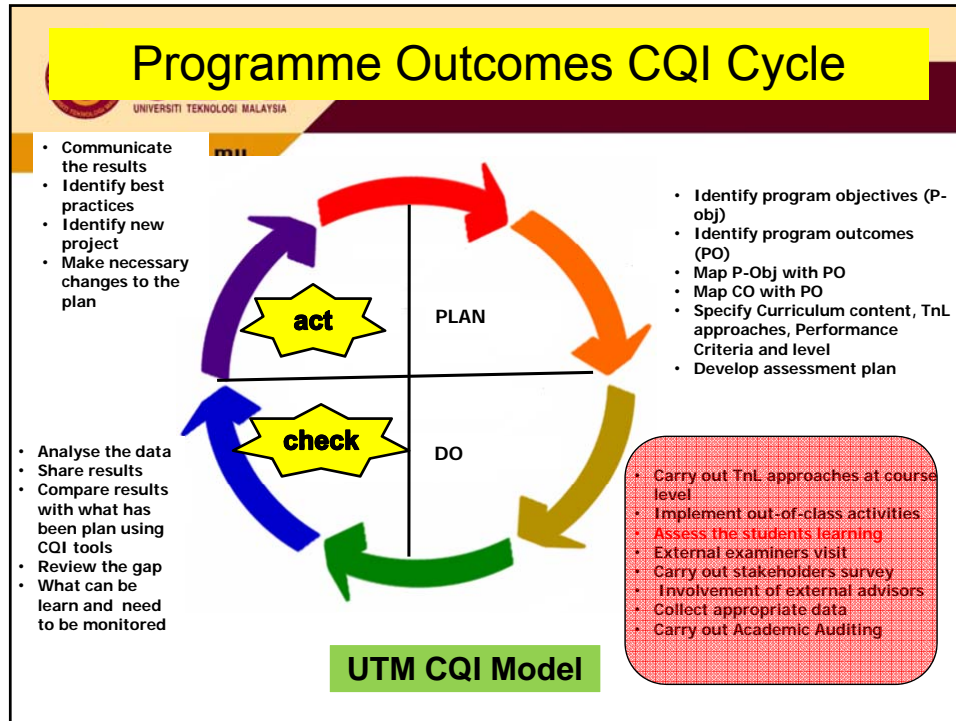

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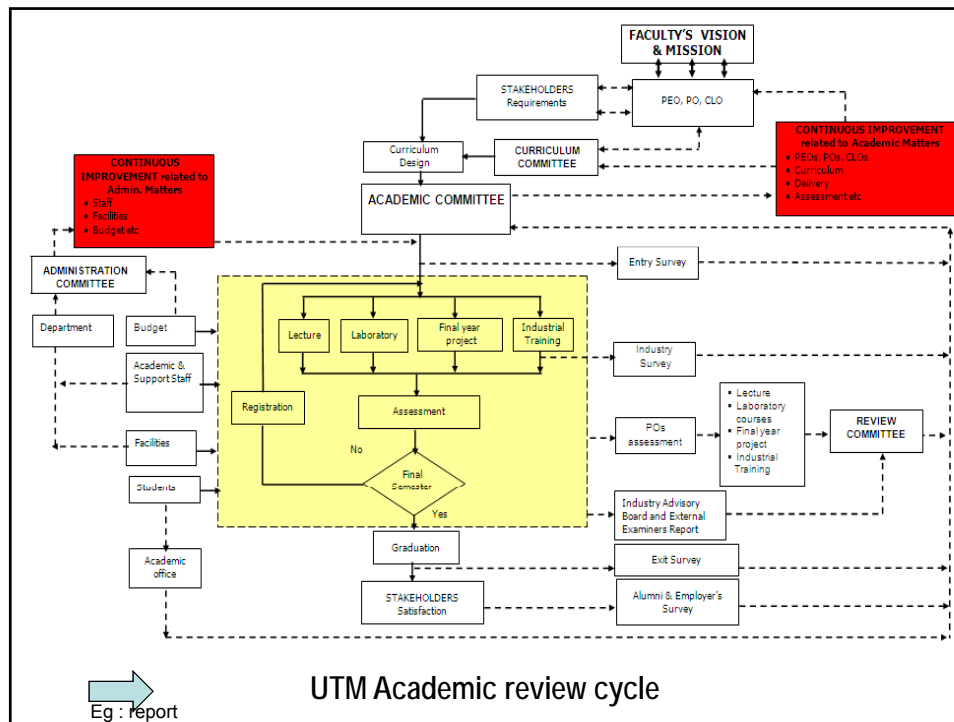
Facts on CQI

- Success is achieved through meeting the needs of those we serve.
- Most problems are found in processes. CQI does not seek to blame, but rather to improve processes.
- It is possible to achieve continual improvement through small, incremental changes using the scientific method.
- Continuous improvement is most effective when it becomes a natural part of the way everyday work is done.

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Self-review is reflected from the regular analyses made every semester to check on the academic performance of students and programmes. It is a normal practice for almost every Faculty to report on the following output parameters:

- Employability rate at a particular Convocation
- Graduate-on-Time (GoT) rate
- Performance Status, based on KS (conditional pass) and KG (fail)
- Performance Status, based on CPA (cumulative point average) and GPA (gross point average).
- % courses obtaining > 3.00, exceeding Faculty's KPI
- Mean CGPA of students, against Faculty's KPI
- Rate of "all passed" - % students passing all courses taken for a particular semester
- % students exceeding Faculty's KPI
- % students repeating a particular Course
- **Assessment of all Course Outcome against Faculty's KPI**
- **Assessment of all Programme Outcomes against Faculty's KPI**
- **Generic Skill attainment against Faculty's KPI**
- Appropriateness of credit hours against student learning time (SLT)
- Assessment of Final Examination questions against the Bloom Taxonomy
- Customer complaints, against KPI or customer charter

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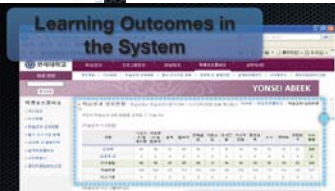

Online Integrated Quality Assurance Monitoring System

Teaching Document Life-Cycle

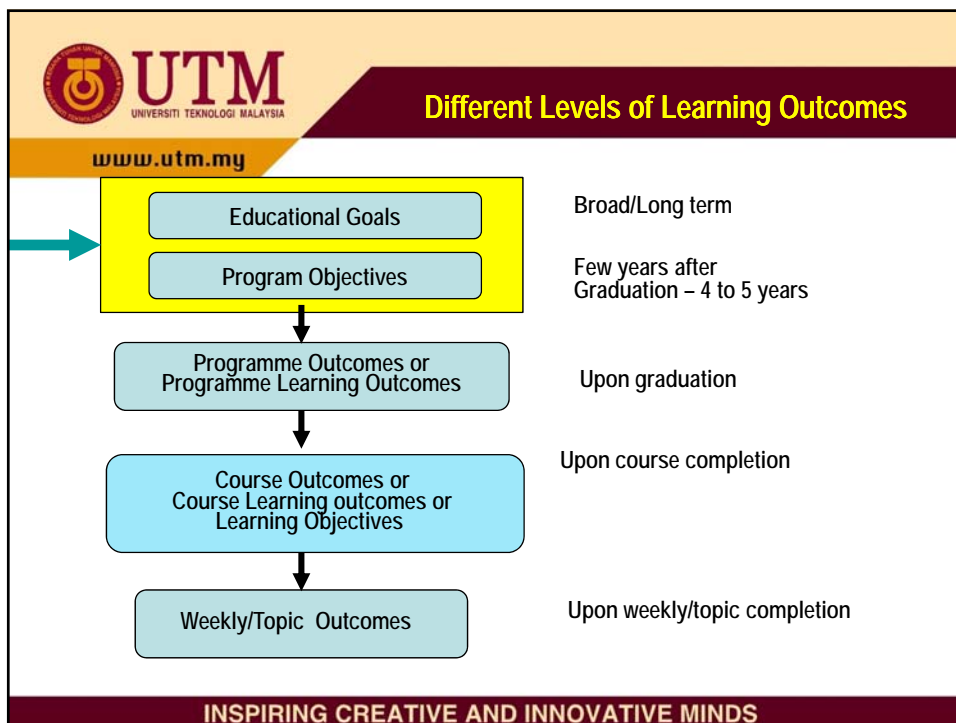
INSPIRING CREATIVE AND INNOVATIVE MINDS

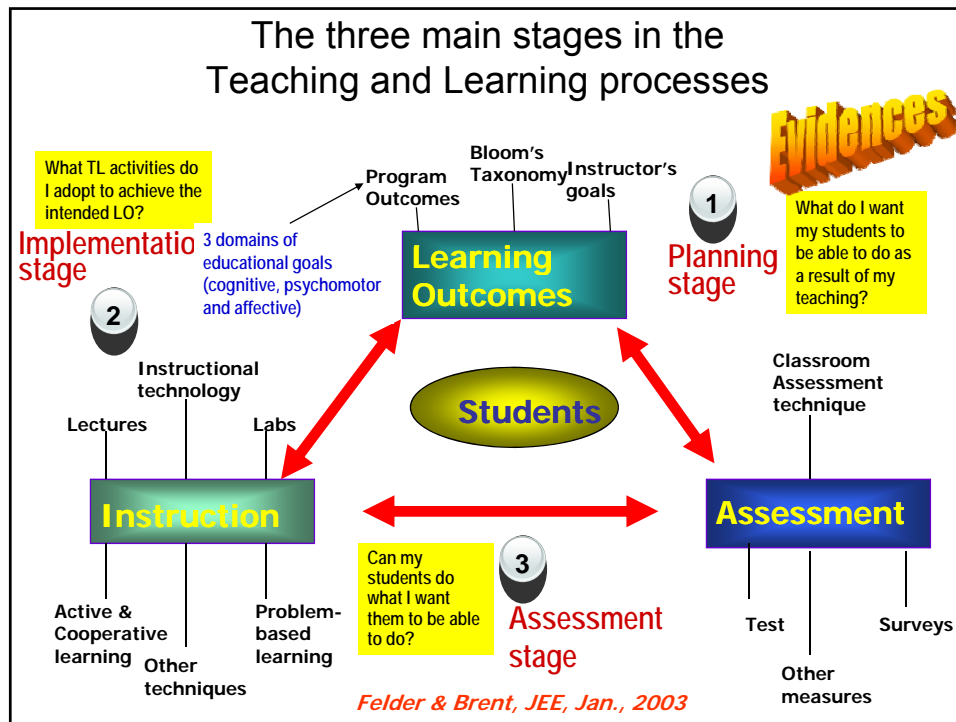
Web Based Supporting System


Main page for ABEEK



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Planning Stage

- Setting Learning Outcomes
- Documentations
 - Programme Specification
 - Course Outlines
 - Policy and Code of Practices in Teaching and Learning
- Preparation for Curriculum Delivery
- Assessment Plan

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PROGRAMME OUTCOMES - Keywords

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PO1 Knowledge in science and civil engineering

PO2 Use techniques,skills and modern tools

PO3 Analyse/Intepret Data, Conduct Experiment and Design System

PO4 Communication Skills

PO5 Critical Thinking and Problem Solving Skills

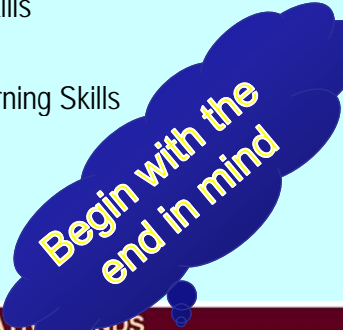
PO6 Team-working Skills

PO7 Information Management & Lifelong Learning Skills

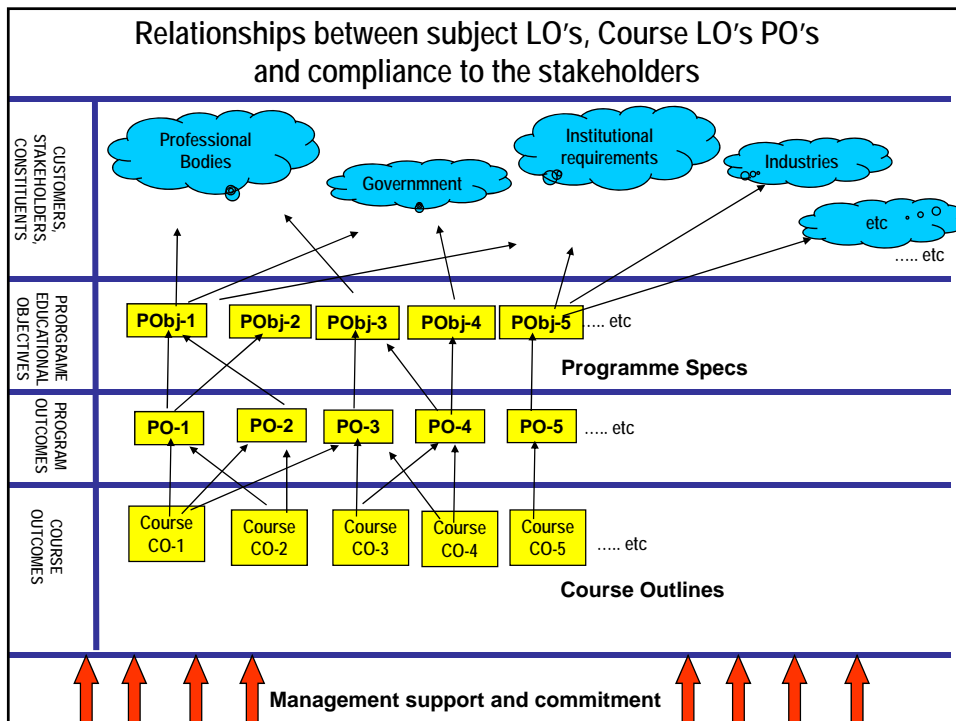
PO8 Entrepreneurship Skills


PO9 Leadership Skills and Pro-activeness

PO10 Ethics and Integrity




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 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my			CO-PO Mapping																	
CORE COURSES OFFERED (based on year and semester)			PROGRAMME OUTCOMES																	
			LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10								
YEAR 1	S1	SAB 1011	Engineering Survey – Fieldwork	/	/															
		SAB 1023	Engineering Survey	/	/															
		SAB 1718	Soil Mechanics	/	/															
		SSE 1792	Calculus	/	/															
		SSE 1893	Engineering Mathematics	/	/															
	UHB 1412	English for Academic Communications	/	/																
	ULT 1022	Islamic and South East Asian Civilisation	/	/																
	S2	SAB 1047	Civil Engineering Laboratory I	/	/															
		SAB 1218	Applied Mechanics	/	/															
		SAB 1423	Civil Engineering Drawing	/	/															
		SAB 1518	Fluid Mechanics	/	/															
		SSE 1793	Differential Equations	/	/															
	S3	UG 18#1	Co-curriculum	/	/															
		SAB 1031	Survey Camp	/	/															


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 Faculty of Civil Engineering UNIVERSITI TEKNOLOGI MALAYSIA			
1. Programme Name		Bachelor in Civil Engineering	
2. Final Award		Bachelor of Engineering (Civil)	
3. Awarding Institution		UTM	
4. Teaching Institution		UTM	
5. Professional or Statutory Body of Accreditation		Board of Engineers Malaysia (BEM)	
6. Language(s) of Instruction		Bahasa Melayu and English	
7. Mode of Study (Conventional, distance learning, etc)		Conventional	
8. Mode of operation (Franchise, self-govern, etc)		Self-governing	
9. Study Scheme (Full Time/Part Time)		Full Time	
10. Study Duration		Minimum : 4 yrs Maximum : 6 yrs	
Type of Semester	No. of Semesters		No. of weeks
	Full Time	Part Time	
	8	6	
Long	8	6	8
Short	4	6	8
11. Entry Requirement		1. Matriculation with minimum of B in Mathematics, Chemistry and Physics or Biology 2. STPM with minimum of B in Mathematics, Chemistry and Physics 3. Diploma in Civil Engineering with minimum CGPA of 2.70 from recognized institutions	
12. Programme Objectives			
(i)		Graduates are able to apply their knowledge and skills in the planning, analysis, design and supervision of works related to the civil engineering discipline.	
(ii)		Graduates are technically competent in solving problems logically, analytically and creatively based on sound facts and ideas.	
(iii)		Graduates possess leadership and professional qualities contributing towards the development of	

Program Specification

FACULTY OF CIVIL ENGINEERING		Page : 1 of 5																					
DESIGN OF STEEL AND TIMBER STRUCTURES SAM 4324		Revision : D Date of issue : 1 st June 2003 Last Amendment: 10 th November 2004 Edition: 1 Procedure No. : FKA/PG/NTS/SAM4324																					
PREREQUISITE:	SAM 3223 – THEORY OF STRUCTURES																						
SEMESTER :	SEMESTER 1 / SEMESTER 2 / SEMESTER 3																						
LECTURES HOURS:	3 HOURS LECTURE 2 HOURS PRACTICAL																						
LECTURERS:	<table border="1"> <thead> <tr> <th>No</th> <th>Name</th> <th>Room</th> <th>Phone number</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Dr. A. Aziz Saif</td> <td>CE3-316</td> <td>31684</td> </tr> <tr> <td>2.</td> <td>PM Nur Azwan Md Tahir</td> <td>CE8-231</td> <td>31614</td> </tr> <tr> <td>3.</td> <td>PM Shahrin Wahman</td> <td>M46-Pej Akad</td> <td>31503</td> </tr> <tr> <td>4.</td> <td>Dr. Mohamad Ismail</td> <td>M46-Pej KJ</td> <td>31505</td> </tr> </tbody> </table>			No	Name	Room	Phone number	1.	Dr. A. Aziz Saif	CE3-316	31684	2.	PM Nur Azwan Md Tahir	CE8-231	31614	3.	PM Shahrin Wahman	M46-Pej Akad	31503	4.	Dr. Mohamad Ismail	M46-Pej KJ	31505
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3.	PM Shahrin Wahman	M46-Pej Akad	31503																				
4.	Dr. Mohamad Ismail	M46-Pej KJ	31505																				
SYNOPSIS:	<p>This is a core subject. It will expose the students to the analysis and design of steel and timber structural elements. For the steel design, the topics covered include the advantages and the general concepts of steel constructions, analysis and design of restrained and unrestrained beams, columns with axial load, columns with axial load and bending moment, trusses, bolt and weld connections, and elastic and plastic design of portal frames. For timber structures, the topics covered include the design of beams</p>																						

 UTM UNIVERSITI TEKNOLOGI MALAYSIA		<h2>Lecture plan or course outline</h2>		
LEARNING OUTCOMES				
By the end of the course, students should be able to :				
CO	Course Learning Outcomes	Programme Outcome(s)	Taxonomies and Soft-Skills	Assessment Methods
CO1	Describe the concept and principles of steel and timber design based on the relevant codes of practice.	PO1	C1	T, F
CO2	Estimate the design loadings, analyse and justify structural elements correctly.	PO1, PO2, PO3	C4, A3	T, PR, F
CO3	Use the relevant codes of practise to design structural steel and timber elements.	PO1, PO2, PO3	C5, P4	T, PR, F
CO4	Prepare structural design report and integrate with drawing plan and structural element detailings.	PO3	C3, P4, A4	PR
CO5	Work effectively in a team producing a design report within a stipulated timeframe.	PO7	A4, TS1, TS2, TS3	Peer assessment and observation


 UTM UNIVERSITI TEKNOLOGI MALAYSIA			Lecture plan or course outline
STUDENT LEARNING TIME			
No.	Teaching and Learning Activities	Student Learning Time (hours)	
1.	Face-to-Face Learning		
	a. Lecturer-Centered Learning		
	i. Lecture	28	
	b. Student-Centered Learning (SCL)		
	i. Laboratory / Tutorial	28	
	ii. Student-centered learning activities – Active Learning, Project Based Learning	-	
2.	Self-Directed Learning		
	a. Non-face-to-face learning or student-centered learning (SCL) such as manual, assignment, module, e-Learning, etc.	25	
	b. Revision	21	
	c. Assessment Preparations	12	
3.	Formal Assessment		
	a. Continuous Assessment	3	
	b. Final Exam	3	
Total (SLT)		120	

 UTM UNIVERSITI TEKNOLOGI MALAYSIA			Performance criteria at PO level			
www.utm.my						
LO1 : Ability to acquire knowledge of science and civil engineering principles.						
NO.	CRITERIA	LEVEL 1 (0-39)	LEVEL 2 (40-49)	LEVEL 3 (50-64)	LEVEL 4 (65-79)	LEVEL 5 (80-100)
1	Applying the knowledge of mathematics	Unable to define, link and apply mathematical principles in solving basic engineering problem or practice	Able to describe and link mathematical principles in solving basic engineering problem or practice	Able to apply the mathematical principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to apply and analyse mathematical principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to combine mathematical principles to formulate analytical or numerical model in solving basic engineering problem or practice
3	Applying the knowledge of sciences and engineering principles	Unable to define, link and apply scientific and engineering principles in solving basic engineering problem or practice	Able to describe and link scientific and engineering principles in solving basic engineering problem or practice	Able to apply scientific and engineering principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to apply and analyse scientific and engineering principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to combine scientific and engineering principles to formulate analytical or numerical model in solving basic engineering problem or practice
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UTM UNIVERSITI TEKNOLOGI MALAYSIA		Performance criteria at PO level				
www.utm.my						
LO7 : Ability to function effectively as an individual in a team to achieve common goals						
NO.	CRITERIA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
1.	Working responsibility as a team member	Did not work to contribute to the success of the group. Was not a valuable asset to the group	Minimum effort to contribute to the team work. Often misses the group meeting and discussion. Most of the time depends on other team members	Average effort to contribute to the team work and sometime need reminder	Significant effort to contribute to the team work and attend group meeting and discussion	Very significant effort to contribute to the team work. Always completed individual task and contributed to the group success as a valuable team player
2.	Contribution to the team project	Does not provides useful ideas and relevant information when participating in the team discussion.	Rarely provides useful ideas when participating in the team discussion.	Sometimes provides useful ideas when participating in the team discussion. A strong group member who tries hard.	Generally provides useful ideas when participating in the group and project discussion.	Always provides useful ideas and relevant information when participating in the group and project discussion. Conducted extensive search or information
3.	Interactive and group skills	Has problems working with others/avoids work with others. No effort to develop interactive skill. Does not consider the ideas of others or contributes inappropriately in groups.	Rarely makes an effort to develop interactive skills. Uses only basic interactive skills.	Sometimes show an effort to develop interactive skill. Meets obligations to others; can offer and/or support imbatives.	Generally interact effectively within a group, giving and receiving information and ideas and modifying responses where appropriate.	Always interact effectively within a group. Can recognize or support the idea from team members.
4.	Valuing others	Discourteous to other group member. Often argues and occasional personal attacks and "put-down", wants to have things done his way.	Rarely pay much attention when others talk and often assume their ideas will not work.	Sometimes consider and listen to the views of team members.	generally listen to other points of view, always uses appropriate and respectful language.	Always listens to others and their ideas; helps them develop their ideas while giving them full credit, always helps the team reach a fair decision.
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UTM UNIVERSITI TEKNOLOGI MALAYSIA		Performance criteria at CO level ?	
LEARNING OUTCOMES			
By the end of the course, students should be able to :			
CO	Course Learning Outcomes	Programme Outcome(s)	Performance criteria
CO1	Describe the concept and principles of steel and timber design based on the relevant codes of practice.	PO1	
CO2	Estimate the design loadings, analyse and justify structural elements correctly.	PO1, PO2, PO3	
CO3	Use the relevant codes of practise to design structural steel and timber elements.	PO1, PO2, PO3	
CO4	Prepare structural design report and integrate with drawing plan and structural element detailings.	PO3	
CO5	Work effectively in a team producing a design report within a stipulated timeframe.	PO7	


Lecture plan or course outline

 UTM UNIVERSITI TEKNOLOGI MALAYSIA		<h1 style="text-align: right;">Assessment Plan</h1>				
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO1 Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
	Student examination performance in mathematics courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TP(A)
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)
PO2 Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected/relevant courses that use techniques, skills and tools (engineering drawing, computer programming, surveying)	Every semester commencing 2007-08 semester I	70% getting B and above in each courses			TD(A)
	Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback			TP(A)
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)

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 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my		<h1 style="text-align: right;">Assessment Plan</h1>				
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO3 Ability to analyse, interpret, develop and conduct experiments, and design components, systems, or processes.	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
	Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
	Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TP(A)
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)
PO4 Ability to think critically, identify, formulate and solve civil engineering related problems.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 3			TD(A)
	Feedback on students performance from "Industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer			TP(A)
	Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)

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 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my						
Assessment Plan						
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO5	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 2	<div style="background-color: #e0f2f1; width: 100%; height: 100%;"></div>		TQA(A)
	Student "generic skill" performance in selected courses	Every semester commencing 2007/08 semester II	> 80% giving a positive feedback by the employer			TP(A)
	Student Perception based on Exit survey (S)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)
PO6	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TQA(A)
	Student "generic skill" performance in selected courses	Every semester commencing 2007/08 semester II	> 70% of the student obtaining at least B in the entrepreneurship course			TP(A)
	Student Perception based on Exit survey (S)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)
PO7	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TQA(A)
	Student "generic skill" performance in selected courses	Every semester commencing 2007/08 semester II	> 70% of the student obtaining at least level 2			TP(A)
	Student Perception based on Exit survey (S)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)

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Curriculum Delivery



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Effective Classroom Strategies

- Democratic instructional approaches are superior to indoctrinational approaches for imparting generic skills to students




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Problem Based Learning - PBL

- Instructors assume the role of facilitators and coaches rather than lecturers and order givers, requiring students to take much of the responsibility for their own learning





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E-Learning UTM (http://elearning.utm.my)

Main Menu
Site news

Courses

- Fakulti Alam Bina
- Fakulti Kejuruteraan Awam
- Fakulti Kejuruteraan Elektrik
- Fakulti Kejuruteraan Mekanikal
- Fakulti Kejuruteraan Kimia dan Kejuruteraan Sumber Asli
- Fakulti Sains
- Fakulti Kejuruteraan dan Sains Geoinformasi
- Fakulti Sains Komputer dan Sistem Maklumat
- Fakulti Pengurusan dan Pembangunan Sumber Manusia
- Fakulti Pendidikan
- Unit Organisasi Islam

Site news

Suggested Internet Browser
by E-learning Admin - Wednesday, 23 February 2005, 11:11 AM

E-learning System is best viewed with [Mozilla Firefox](#)

E-learning Short Course For Students
by E-learning Admin - Monday, 17 January 2005, 11:46 AM

Venue : **Dewan Komputer Pelajar CICT, Aras 3 ,D07**

Course Timetable :

Date	Time	Faculty
17 January 2005	11:00am-12:00pm	Open
18 January 2005	03:30pm-04:00pm	FKE

Calendar
April 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
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24	25	26	27	28	29	30

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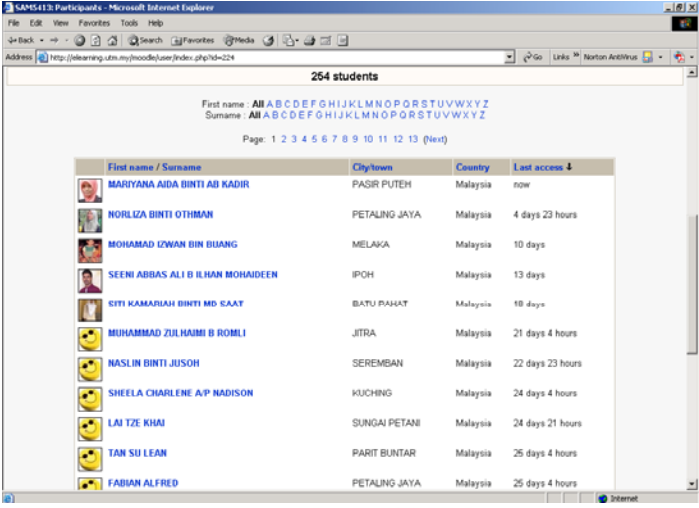
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254 students

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Surname: All A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Page: 1 2 3 4 5 6 7 8 9 10 11 12 13 (next)

First name / Surname	City/town	Country	Last access
MARYANA AIDA BINTI ABI KADIR	PASIR PUTEH	Malaysia	now
NORLIZA BINTI OTHMAN	PETALING JAYA	Malaysia	4 days 23 hours
MOHAMAD IQWAN BIN BUANG	MELAKA	Malaysia	10 days
SEENI ABBAS ALI B ILHAN MOHAIDEEN	IPOH	Malaysia	13 days
SITI KAMARIAH BINTI MD ISAAT	BATU PAHAT	Malaysia	18 days
MUHAMMAD ZULHAMI B ROMLI	JITRA	Malaysia	21 days 4 hours
NASLIN BINTI JUSOH	SEREMBAN	Malaysia	22 days 23 hours
SHEELA CHARLENE A/P MADISON	KUCHING	Malaysia	24 days 4 hours
LAI TZE KHAI	SUNGAI PETANI	Malaysia	24 days 21 hours
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INSPIRING CREATIVE AND INNOVATIVE MINDS⁴⁵

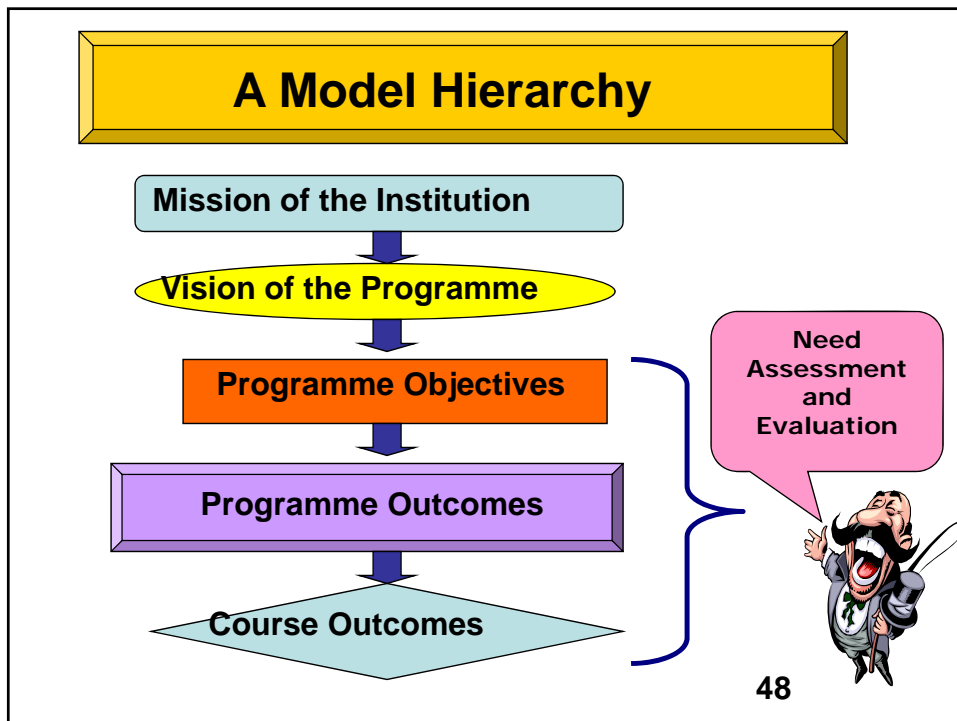

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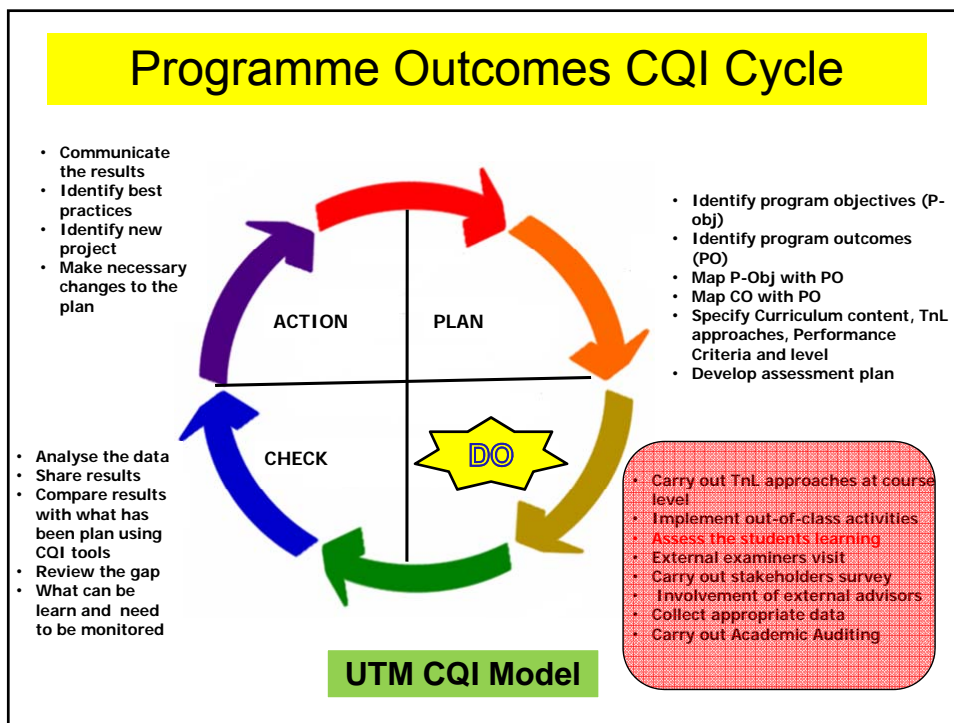
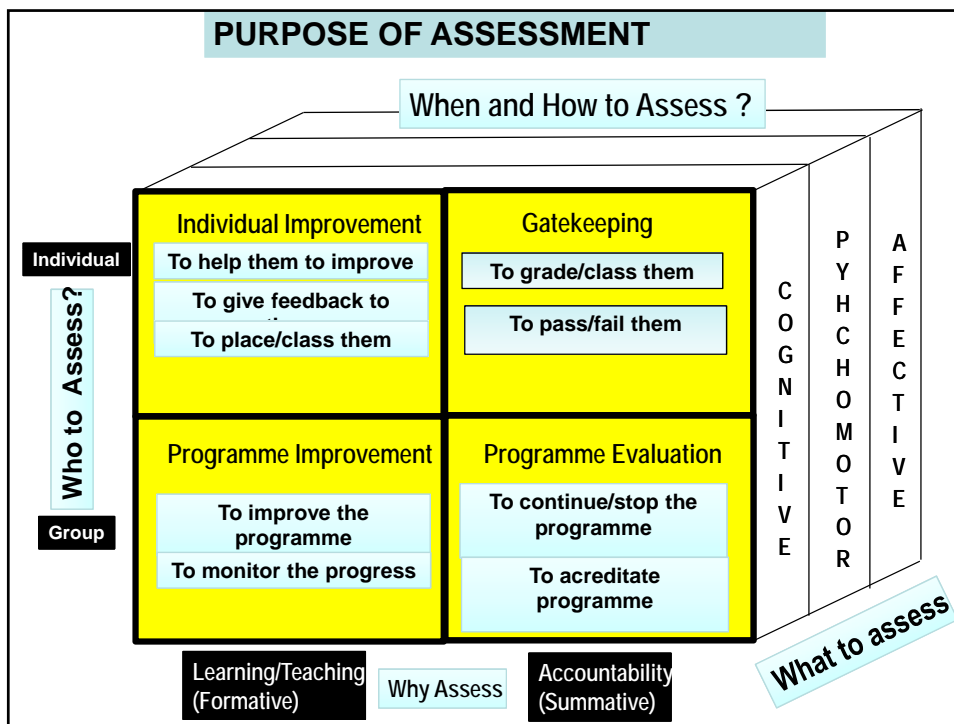
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OTHER APPROACHES

- Projects on Professional Practices
- Seminars
- Engineering ethics
- Laboratory works


INSPIRING CREATIVE AND INNOVATIVE MINDS⁴⁶






Various methods/tools of Assessment and Evaluation			
Evaluation by Lecturers for each course		Evaluation by Students and the Faculty on overall competencies	
Technical Competencies (PO1, PO2, PO3)	Generic Skills (PO4-PO10)	Technical Competencies (PO1, PO2, PO3)	Generic Skills (PO4-PO10)
Develop assessment based on Blooms Taxonomy	Develop Performance criteria for each skill	Entry Self Assessment Students Portfolio Surveys/Feedbacks from stakeholders Examination Results External examiners External advisor feedbacks/report Students self-assessment Academic Advisor Evaluation	
Concentrate on quizzes, tests, projects, design, examinations etc	Group subjects that addressed the generic skills		
	Forms or records used in the assessment		


INSPIRING CREATIVE AND INNOVATIVE MINDS

 UTM UNIVERSITI TEKNOLOGI MALAYSIA		Assessment- data analysed					
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis be carried out and presented?	What will be the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)	
PO1 Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2008	70% getting B and above in each courses	From the 24 samples taken over 3 years, all courses achieved the target in more than 70% of the student achieving B in all the courses being sampled.		TD(A)	
	Student examination performance in mathematics courses	Every year starting 2008	70% getting B and above in each courses	78% of the samples (14 samples) involving all the maths courses offered do not meet the target.		TD(A)	
	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback		TP(A)	
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LDI for the last 5 semester			
PO2 Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected/relevant courses that use techniques, skills and tools (Engineering at entry, computer programming, warehousing)	Every semester commencing 2007/08 semester II	70% getting B and above in each courses	only 1 out of 15 samples involving 5 courses taken over 3 years did not meet the target.	TD(A)		
	Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback	88% giving positive feedback	TP(A)		
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO2 for the last 5 semester	TP(A)		

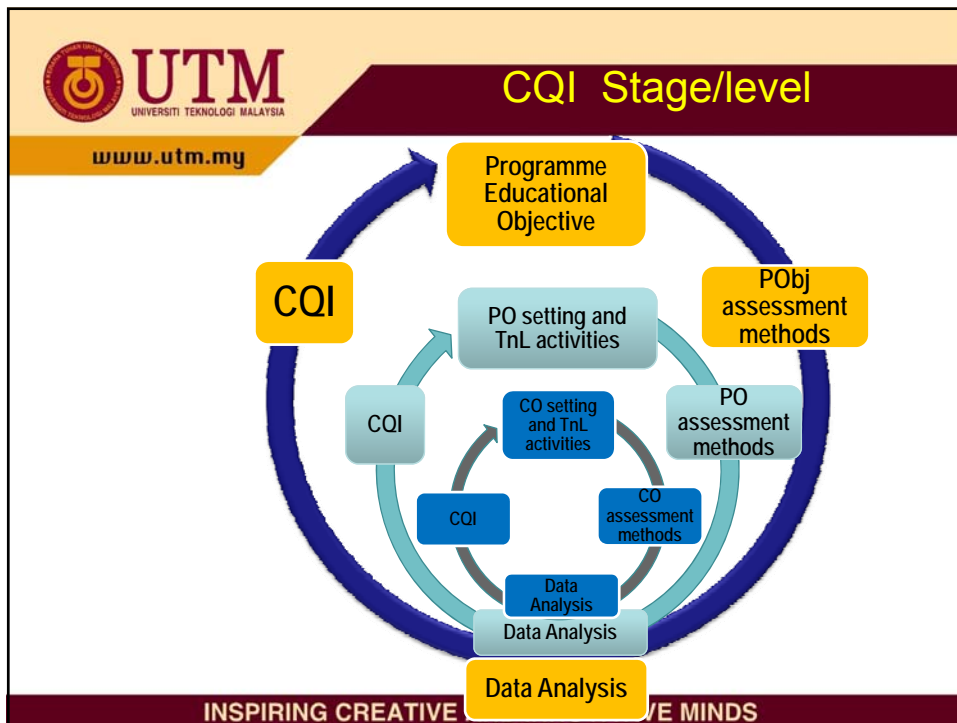
INSPIRING CREATIVE AND INNOVATIVE MINDS

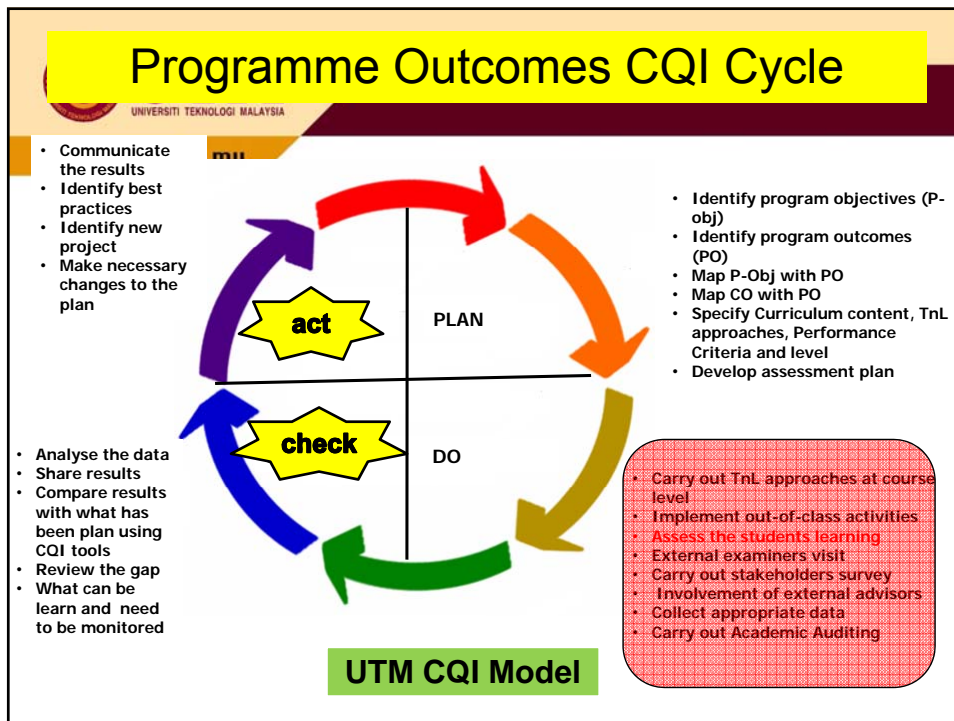
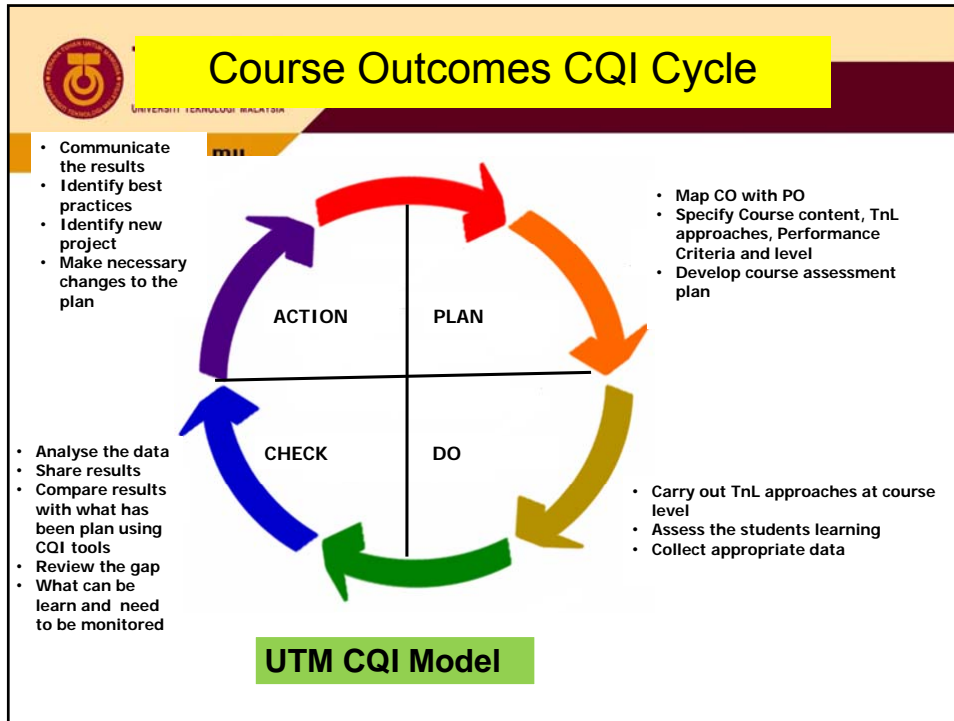
 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my		<h2 style="text-align: right;">Assessment- data analysed</h2>					
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)	
PO3	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses	All the students achieved above 70% in 4 samples taken over 2 years, therefore meet the targeted outcomes		TD(A)	
	Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses	8 courses are sample over 3 years, 6 courses meet the target. The geotechnics course shows an improvement on the student performance. Structural Analysis courses did not meet the target.		TD(A)	
	Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses	3 samples are analysed, taken from 3 related courses over 3 years. All, except one meet the target. Consistently the structural steel and timber design courses did not meet the target.		TD(A)	
	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback		TP(A)	
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO3 for the last 5 semester		TP(A)	
PO4	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 2	81% courses have more than 75% of the student obtaining at least level 2	TD(A)		
	Feedback on students performance from "Industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer	96% giving positive feedback	TP(A)		
	Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO4 for the last 5 semester	TP(A)		


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 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my		<h2 style="text-align: right;">Assessment- data analysed</h2>					
Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)	
PO5	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 2	88 courses have more than 75% of the student obtaining at least level 2		TD(A)	
	Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% giving a positive feedback by the employer	93% giving positive feedback		TP(A)	
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the P05 for the last 5 semester		TP(A)	
PO6	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	92% giving positive feedback	TD(A)		
	Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 70% of the student obtaining at least B in the entrepreneurship course	75% obtaining at least B	TP(A)		
PO7	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the P06 for the last 5 semester	TP(A)		
	Employers perception survey	Once in two years	> 90% giving a positive feedback by the employer	95% giving positive feedback	TD(A)		
PO7	Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 70% of the student obtaining at least level 2	57% courses have more than 70% of the student obtaining at least level 2	TP(A)		
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the P07 for the last 5 semester	TP(A)		

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Closing the loop at CO level

Example

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Closing the loop at PO level

Program Outcomes	Assessment tools or methods used	When will the data collection/analysis be carried out and presented?	What will be the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)	
PO1	Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2008	> 70% getting B and above in each courses	From the 24 samples taken over 3 years, all courses achieved the target in more than 70% of the student achieving B in all the courses being sampled	Introduced system where examination questions must address the appropriate level of Bloom's taxonomy and properly address the Course Learning Outcome (CO) and subsequently addressing the LOs	TD(A)
	Student examination performance in mathematics courses	Every year starting 2008	> 70% getting B and above in each courses	78% of the samples (14 samples) involving all the maths courses offered do not meet the target	To integrate engineering problems into the maths courses. More discussion between FEA and maths staff. FND research to address this issue	TD(A)	
	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TP(A)	
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LDI for the last 5 semester		TP(A)	
PO2	Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected relevant courses that use techniques, skills and tools (engineering drawing, computer programming, etc)	Every semester commencing 2007-08 semester II	> 70% getting B and above in each courses	only 1 out of 15 samples involving 5 courses taken over 3 years did not meet the target	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
	Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback	88% giving positive feedback	TP(A)		
	Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO2 for the last 5 semester	TP(A)		

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 UTM UNIVERSITI TEKNOLOGI MALAYSIA www.utm.my							
Closing the loop at PO level							
	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO3	Ability to analyse, interpret, develop and conduct experiments, and design components, systems, or processes.	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses	All the students achieved above 70% in 4 samples taken over 2 years, therefore meet the the targeted outcomes	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses	8 courses are sample over 3 years, 6 courses meet the target. The geotechnics course shows an improvement. Structural Analysis courses did not meet the target.		TD(A)
		Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses	3 samples are analysed, taken from 3 related courses over 3 years. All, except one meet the target. Consistently the structural steel and timber design courses did not meet the target.		TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO3 for the last 5 semester		TP(A)
PO4	Ability to think critically, identify, formulate and solve civil engineering related problems.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 2	6/17 courses have more than 75% of the student obtaining at least level 2	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Feedback on students performance from "Industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer	96% giving positive feedback		TP(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO4 for the last 5 semester		TP(A)

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Closing the loop at PO level							
	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO5	Ability to communicate effectively and with confidence.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 2	6/8 courses have more than 75% of the student obtaining at least level 2	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% giving a positive feedback by the employer	93% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the POC for the last 5 semester		TP(A)
PO6	Ability to identify business opportunities and embark on entrepreneurship.	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	92% giving positive feedback	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 70% of the student obtaining at least B in the entrepreneurship course	75% obtaining at least B		TP(A)
PO7	Ability to function effectively as an individual in a team to achieve common goals	Employers perception survey	Once in two years	> 90% giving a positive feedback by the employer	96% giving positive feedback	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 70% of the student obtaining at least level 2	13/21 courses have more than 70% of the student obtaining at least level 2		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO7 for the last 5 semester		TP(A)

INSPIRING CREATIVE AND INNOVATIVE MINDS

The banner features the UTM logo on the left, which includes a circular emblem with a stylized 'T' and 'M' and the text 'UNIVERSITI TEKNOLOGI MALAYSIA'. To the right of the logo, the text 'UTM' is written in large, bold, black letters, with 'UNIVERSITI TEKNOLOGI MALAYSIA' in smaller letters below it. Further right, 'Faculty of Civil Engineering' is written in a smaller font. The background of the banner is a collage of images: a modern building, a city skyline at night, and a large globe. The slogan 'Inspiring creative and innovative minds' is written in a yellow font at the bottom of the collage. In the center of the banner, the words 'Thank you' are written in a large, red, cursive font. Below this, there is a photograph of the UTM main gate, a large building with a traditional roof, surrounded by lush greenery and palm trees. At the bottom of the banner, the text 'UNIVERSITI TEKNOLOGI MALAYSIA' and 'Inspiring creative and innovative minds' is repeated in white on a dark red background.

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Faculty of
Civil Engineering

"Inspiring creative and innovative minds"

Thank you

UNIVERSITI TEKNOLOGI MALAYSIA
"Inspiring creative and innovative minds"



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Lecture plan or course outline

STUDENT LEARNING TIME

No.	Teaching and Learning Activities	Student Learning Time (hours)
1.	Face-to-Face Learning	
	a. Lecturer-Centered Learning	
	i. Lecture	28
	b. Student-Centered Learning (SCL)	
	i. Laboratory / Tutorial	28
	ii. Student-centered learning activities – Active Learning, Project Based Learning	-
2.	Self-Directed Learning	
	a. Non-face-to-face learning or student-centered learning (SCL) such as manual, assignment, module, e-Learning, etc.	25
	b. Revision	21
	c. Assessment Preparations	12
3.	Formal Assessment	
	a. Continuous Assessment	3
	b. Final Exam	3
Total (SLT)		120



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Performance criteria at PO level

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LO1 : Ability to acquire knowledge of science and civil engineering principles.

NO.	CRITERIA	LEVEL 1 (0-39)	LEVEL 2 (40-49)	LEVEL 3 (50-64)	LEVEL 4 (65-79)	LEVEL 5 (80-100)
1	Applying the knowledge of mathematics	Unable to define, link and apply mathematical principles in solving basic engineering problem or practice	Able to describe and link mathematical principles in solving basic engineering problem or practice	Able to apply the mathematical principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to apply and analyse mathematical principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to combine mathematical principles to formulate analytical or numerical model in solving basic engineering problem or practice
2	Applying the knowledge of sciences and engineering principles	Unable to define, link and apply scientific and engineering principles in solving basic engineering problem or practice	Able to describe and link scientific and engineering principles in solving basic engineering problem or practice	Able to apply scientific and engineering principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to apply and analyse scientific and engineering principles to obtain analytical or numerical solution in solving basic engineering problem or practice	Able to combine scientific and engineering principles to formulate analytical or numerical model in solving basic engineering problem or practice

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Performance criteria at PO level

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LO7 : Ability to function effectively as an individual in a team to achieve common goals

NO.	CRITERIA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
1.	Working responsibility as a team member	Did not work to contribute to the success of the group. Was not a valuable asset to the group	Minimum effort to contribute to the team work. Often misses the group meeting and discussion. Most of the time depends on other team members	Average effort to contribute to the team work and sometime need reminder	Significant effort to contribute to the team work and attend group meeting and discussion	Very significant effort to contribute to the team work. Always completed individual task and contributed to the group succedss as a valuable team player
2.	Contribution to the team project	Does not provides useful ideas and relevant information when participating in the team discussion.	Rarely provides useful ideas when participating in the team discussion.	Sometimes provides useful ideas when participating in the team discussion. A strong group member who tries hard.	Generally provides useful ideas when participating in the group and project discussion.	Always provides useful ideas and relevant information when participating in the group and project discussion. Conducted extensive search or information
3.	Interactive and group skills	Has problems working with others/avoids work with others. No effort to develop interactive skill. Does not consider the ideas of others or contributes inappropriately in groups.	Rarely makes and effort to develop interactive skills. Uses only basic interactive skills.	Sometimes show an effort to develop interactive skill. Meets obligations to others; can offer and/or support initiatives.	Generally interact effectively within a group, giving and receiving information and ideas and modifying responses where appropriate.	Always interact effectively within a group. CC+ recognize or support the idea from team members.
4.	Valuing others	Discourteous to other group member. Often argues and occasional personal attacks and "put-down", wants to have things done his way.	Rarely pay much attention when others talk and often assume their ideas will not work.	Sometimes consider and listen to the views of team members.	generally listen to other points of view, always uses appropriate and respectful language.	Always listens to others and their ideas; helps them develop their ideas while giving them full credit, wlawys helps the team reach a fair decision.

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Performance criteria at CO level ?

LEARNING OUTCOMES

By the end of the course, students should be able to :

CO	Course Learning Outcomes	Programme Outcome(s)	Performance criteria
CO1	Describe the concept and principles of steel and timber design based on the relevant codes of practice.	PO1	
CO2	Estimate the design loadings, analyse and justify structural elements correctly.	PO1, PO2, PO3	
CO3	Use the relevant codes of practise to design structural steel and timber elements.	PO1, PO2, PO3	
CO4	Prepare structural design report and integrate with drawing plan and structural element detailings.	PO3	
CO5	Work effectively in a team producing a design report within a stipulated timeframe.	PO7	

Lecture plan or course outline



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Assessment Plan

	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO1	Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
		Student examination performance in mathematics courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			
PO2	Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected relevant courses that use techniques, skills and tools (engineering drawing, computer programming, surveying)	Every semester commencing 2007-08 semester II	70% getting B and above in each courses			TD(A)
		Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback			TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)

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Assessment Plan

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO3	Ability to analyse, interpret, develop and conduct experiments; and design components, systems, or processes.	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
		Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
		Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses			TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer			TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)
PO4	Ability to think critically, identify, formulate and solve civil engineering related problems.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 3			TD(A)
		Feedback on students performance from "industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer			TP(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)

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Assessment Plan

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)				
PO5	Ability to communicate effectively and with confidence.	Employers perception survey	Once in two years	>75% of the student obtaining at least level 3			TD(A)				
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	> 80% giving a positive feedback by the employer			TP(A)				
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)			TP(A)				
PO6	Ability to identify business opportunities and embark on entrepreneurship.	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer					TD(A)		
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>70% of the student obtaining at least B in the entrepreneurship course					TP(A)		
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)					TP(A)		
PO7	Ability to function effectively as an individual in a team to achieve common goals	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer							TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>75% of the student obtaining at least level 3							TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)							TP(A)

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Assessment- data analysed

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO1	Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2006	70% getting B and above in each courses	from the 24 samples taken over 3 years, all courses achieved the target ie more than 70% of the student achieving B in all the courses being sampled		TD(A)
		Student examination performance in mathematics courses	Every year starting 2006	70% getting B and above in each courses	78% of the samples (14 samples) involving all the maths courses offered do not meet the target		TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback +		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO1 for the last 5 semester		
PO2	Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected relevant courses that use techniques, skills and tools (engineering drawing, computer programming, surveying)	Every semester commencing 2007-08 semester II	70% getting B and above in each courses	only 1 out of 15 samples involving 5 courses taken over 3 years did not meet the target		TD(A)
		Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback	98% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO2 for the last 5 semester		TP(A)

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PO3	Ability to analyse, interpret, develop and conduct experiments; and design components, systems, or processes.	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses	All the students achieved above 70% in 4 samples taken over 2 years, therefore meet the the targeted outcomes		TD(A)
		Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses	8 courses are sample over 3 years. 6 courses meet the target. The geotechnic course shows an improvement on the student performance. Structural Analysis courses did not meet the target.		TD(A)
		Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses	9 samples are analysed, taken from 3 related courses over 3 years. All, except one meet the target. Consistently the structural steel and timber design courses did not meet the target.		TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback.		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO3 for the last 5 semester		TP(A)
PO4	Ability to think critically, identify, formulate and solve civil engineering related problems.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 3	15/17 courses have more than 75% of the student obtaining at least level 3	TD(A)	
		Feedback on students performance from "industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer	96% giving positive feedback.	TP(A)	
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO4 for the last 5 semester	TP(A)	

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO5	Ability to communicate effectively and with confidence.	Employers perception survey	Once in two years	>75% of the student obtaining at least level 3	6/8 courses have more than 75% of the student obtaining at least level 3		TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	> 80% giving a positive feedback by the employer	93% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO5 for the last 5 semester		TP(A)
PO6	Ability to identify business opportunities and embark on entrepreneurship.	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	92% giving positive feedback		TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>70% of the student obtaining at least B in the entrepreneurship course	75 % obtaining at least B		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO6 for the last 5 semester		TP(A)
PO7	Ability to function effectively as an individual in a team to achieve common goals	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	91% giving positive feedback		TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>75% of the student obtaining at least level 3	12/12 courses have more than 75% of the student obtaining at least level 3		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO7 for the last 5 semester		TP(A)

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Closing the loop at PO level

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the the indicator that the outcome is achieved ***	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO1	Ability to acquire knowledge of science and civil engineering principles.	Student examination performance in science and engineering courses	Every year starting 2006	70% getting B and above in each courses	from the 24 samples taken over 3 years, all courses achieved the target ie more than 70% of the student achieving B in all the courses being sampled	Introduced system where examination questions must address the appropriate level of Bloom's taxonomy and properly address the Course Learning Outcome (CO) and subsequently addressing the LOs	TD(A)
		Student examination performance in mathematics courses	Every year starting 2006	70% getting B and above in each courses	78% of the samples (14 samples) involving all the maths courses offered do not meet the target	To integrate engineering problems into the maths courses. More discussion between FKA and maths staff. PhD research to address this issue	TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback +	The Faculty is currently reviewing the SAB Programme. Emphasise is on the content, deliver methods/approaches or assessment strategies	TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO1 for the last 5 semester		
PO2	Ability to use the techniques, skills and modern civil engineering tools	Student examination performance in selected relevant courses that use techniques, skills and tools (engineering drawing, computer programming, surveying)	Every semester commencing 2007-08 semester II	70% getting B and above in each courses	only 1 out of 15 samples involving 5 courses taken our 3 years did not meet the target	The Faculty is currently reviewing the SAB Programme. Emphasise is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Employers perception survey	Once in two years	> 80% indicating a satisfactory feedback	98% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO2 for the last 5 semester		TP(A)

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	Program Outcomes	Assessment tools or methods used	When will the data collection/analysis carried out and presented	What will be the the indicator that the outcome is achieved ---	What are the outcomes of the analysis?	Continuous Quality Improvement Initiatives	Who is responsible? (collection and analysis)
PO3	Ability to analyse, interpret, develop and conduct experiments; and design components, systems, or processes.	Student examination performance in selected lab based courses	Every year starting 2006	70% getting B and above in each courses	All the students achieved above 70% in 4 samples taken over 2 years, therefore meet the the targeted outcomes	The Faculty is currently reviewing the SAB Programme. Emphasise is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student examination performance in selected analysis based courses	Every year starting 2006	70% getting B and above in each courses	8 courses are sample over 3 years. 6 courses meet the target. The geotechnic course shows an improvement on the student performance. Structural Analysis courses did not meet the target.		TD(A)
		Student examination performance in selected design or system/process based courses	Every year starting 2006	70% getting B and above in each courses	9 samples are analysed, taken from 3 related courses over 3 years. All, except one meet the target. Consistently the structural steel and timber design courses did not meet the target.		TD(A)
		Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	97% giving positive feedback.		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO3 for the last 5 semester		TP(A)
PO4	Ability to think critically, identify, formulate and solve civil engineering related problems.	Employers perception survey	Once in two years	> 75% of the student obtaining at least level 3	15/17 courses have more than 75% of the student obtaining at least level 3	The Faculty is currently reviewing the SAB Programme. Emphasise is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Fedback on students performance from "industrial training supervisor"	Every year	> 80% giving a positive feedback by the employer	96% giving positive feedback.		TP(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007-08 semester II	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the LO4 for the last 5 semester		TP(A)

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PO5	Ability to communicate effectively and with confidence.	Employers perception survey	Once in two years	>75% of the student obtaining at least level 3	6/8 courses have more than 75% of the student obtaining at least level 3	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	> 80% giving a positive feedback by the employer	93% giving positive feedback		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO5 for the last 5 semester		TP(A)
PO6	Ability to identify business opportunities and embark on entrepreneurship.	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	92% giving positive feedback	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>70% of the student obtaining at least B in the entrepreneurship course	75 % obtaining at least B		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO6 for the last 5 semester		TP(A)
PO7	Ability to function effectively as an individual in a team to achieve common goals	Employers perception survey	Once in two years	> 80% giving a positive feedback by the employer	91% giving positive feedback	The Faculty is currently reviewing the SAB Programme. Emphasis is on the content, deliver methods/approaches or assessment strategies	TD(A)
		Student "generic skill" performance in selected courses	Every semester commencing 2007 08 semester II	>75% of the student obtaining at least level 3	12/12 courses have more than 75% of the student obtaining at least level 3		TP(A)
		Student Perception based on Exit survey (D)	Every year	> 80% indicating a satisfactory feedback by graduating student (exit survey)	> 80% were able to attain the PO7 for the last 5 semester		TP(A)

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