

**International Symposium on
QUALITY ASSURANCE IN
ENGINEERING EDUCATION
THROUGH ACCREDITATION-II**



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**Knowledge Sharing on
Addressing Complex Engineering
Problems in Engineers in Society
Course - Integrated Society Project
(ISP)**

Workshop: Complex Engineering Problem & Activities

Date: 27 August 2020

**Board of Accreditation for Engineering and Technical
Education (BAETE), Institution of Engineers Bangladesh
(IEB)**



OUTLINE

Introduction to
EIS Course & ISP
as Assessment
Tool

Problem Statement
and Assigned Tasks

Performance
Criteria Matrix

Programme
Outcomes &
Learning
Outcomes

Complex
Problem
Characteristics
(WP)

Quality Management
System

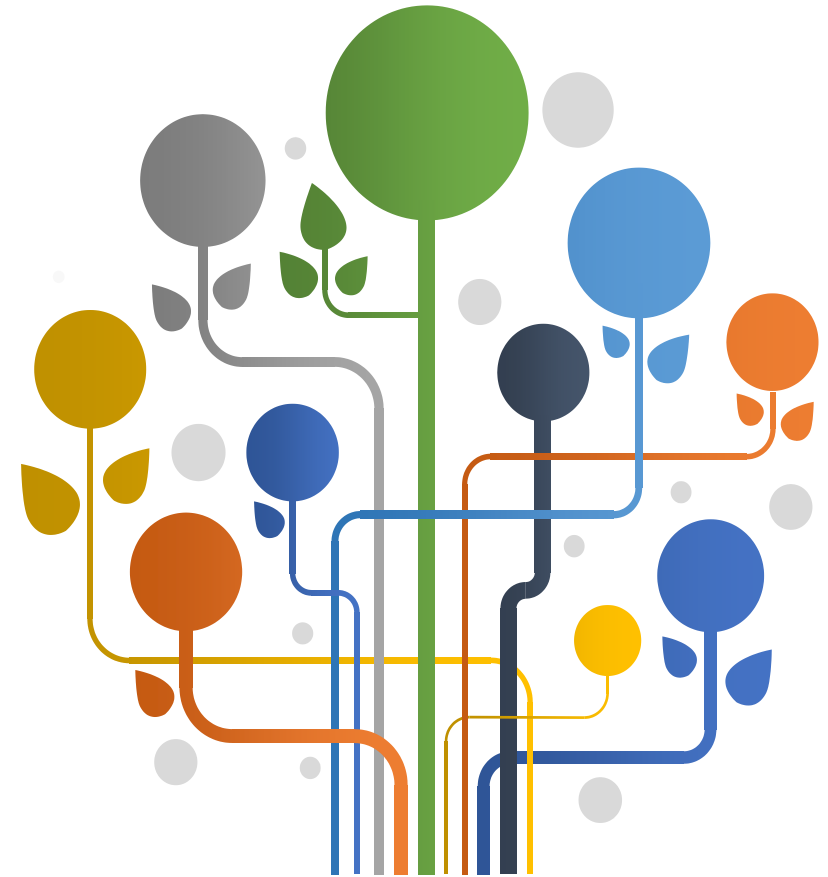
Learning
Outcomes of ISP

Knowledge
Profile (WK)

Conclusions &
Hands-on
Activity

- **This project is designed as part of the Engineers In Society (EIS) Course Assessment.**
- **Integrated Society Project (ISP) : Continuous assessment for Open Distance Learning (ODL) giving an overall percentage of 60%.**
- **The balance of 40% is based on two (2) online tests.**
- **The ISP is carried out by a group of students (not more than 5 person/group) related to the specified problem statement.**

Introduction



Course Outcomes & Programme Outcomes

- **Three (3) Course Outcomes (CO)**
- **Two (2) programme outcomes (PO)**
- **Addressed in the Integrated Society Project mapped as follows:**



CO2: Role of engineering professional bodies

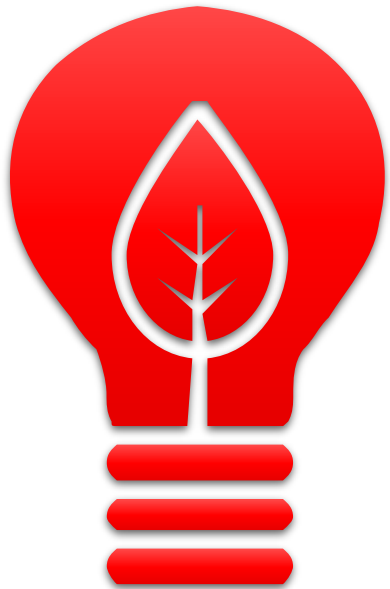
CO4: Local and federal authorities' regulation

CO3: Code of Ethics and Professional Conduct for engineers

PO6: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems (WK7);

PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice (WK7).

Learning Outcomes of ISP



At the end of this ISP, the students should be able to:

- Identify a specific problem or a New Normal (WP4: Infrequently encountered issues) that has arisen during or due to the Movement Control Order (MCO) which has consequent responsibilities relevant to professional civil engineering practices (WP1: depth of knowledge and to evaluate the infrequently encountered issue/problem under various circumstances related to economic, social, cultural, health, safety, legal, environmental and sustainability aspects towards providing effective solutions. (CO2-PO6)
- Propose an innovative Conceptual Civil Engineering solution to the problem or the new normal and elaborate on new relevant issues relating to professional engineering practices (PEP) for effective implementation of the proposed solution (WP3: Depth of analysis) (CO2-PO6)
- Identify the challenges that could be faced by the engineering professional bodies in implementing the proposed solution, due to the rules and regulations imposed by the local and federal authorities (WP5: Extent of Applicable Codes) and to propose solutions how to overcome these challenges imposed by various stakeholders (WP6: Extent of Stakeholders & WP2: Conflicting Requirements). (CO4 -PO6)
- Identify some potential ethical issues and misconducts and propose solutions to these issues and misconducts among the engineers in carrying out the responsibilities relevant to professional civil engineering practices. (CO3-PO8)

Knowledge Profiles (WK)

WK4



Specialist Knowledge

WK6



Engineering Practices

WK7



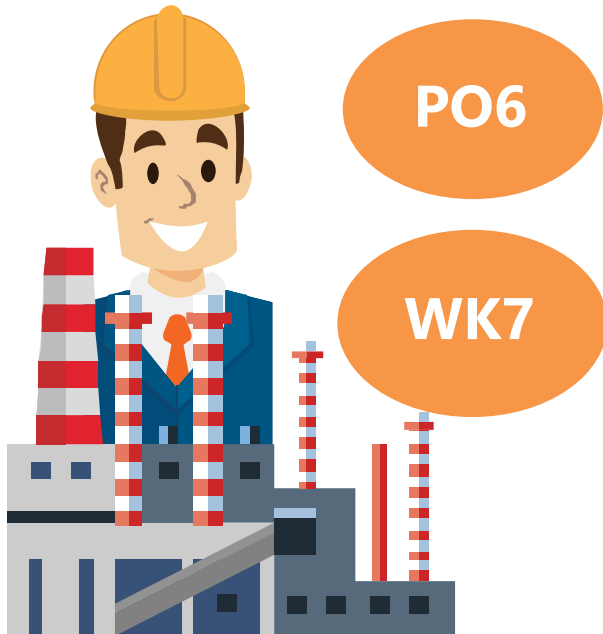
Comprehension on Issues and Approaches

WK8



Research Literature

Mapping of WKs and WPs



Knowledge Profile

WK4: Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.

WK6: Engineering Practices - Knowledge of engineering practice (technology) in the practice areas in the engineering discipline

WK7: Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability

WK8: Engagement with selected knowledge in the research literature of the discipline (*sources related to the issues/problems/solutions*)

Complex Engineering Problem Attributes

WP1: Depth of Knowledge Required = in-depth engineering knowledge at the level of one or more of WK3, **WK4**, WK5, WK6 or **WK8** (WK's) fundamental, first principles analytical approach

WP2: Conflicting requirement
Wide-ranging or conflicting technical, engineering and other issues (*professional bodies, government state & federal authorities, public health & safety*)

WP3: Depth of analysis
No obvious solution and require abstract thinking, originality in analysis to formulate suitable models

WP4: Familiarity of issues or infrequently encountered issues

WP5: Extent of applicable codes: outside problems encompassed by standards and codes of practice for professional engineering - *Code of Practice and Malaysian Legal System*

WP6: Extent of stakeholder
Diverse groups of stakeholders with widely varying needs (*public health and safety, professional bodies, government (state & federal authorities etc.)*)

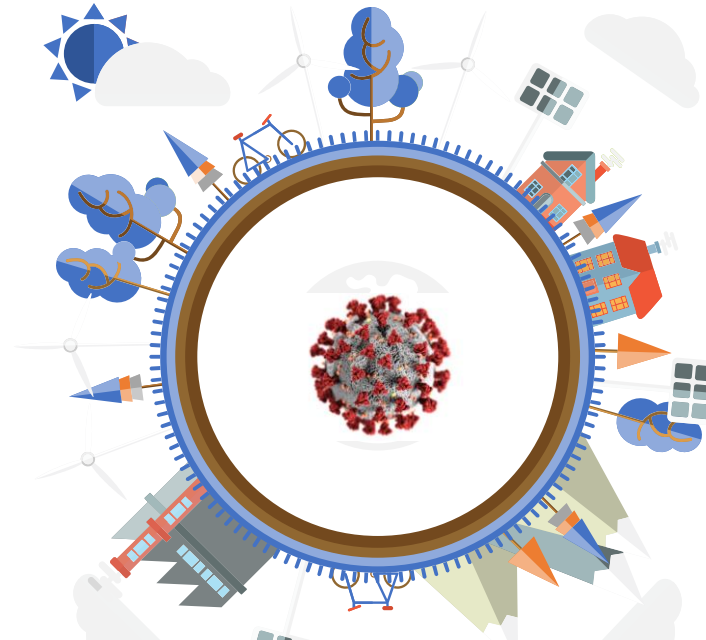
Problem Statement: An Unprecedented Event

by Assoc. Prof. Zulkiflee Yusof , UiTM 2020

*Nobody expected it.
Nobody was prepared for it.
It brought the whole world
to a stop.
Business and recreation
came to a halt.*

*Corona was its first name.
Covid19 made its claim to
fame.
Where did it really begin?
Mysterious was its origin.*

*Front liners became unsung
heroes
But Covid19 brought many
societal woes.*

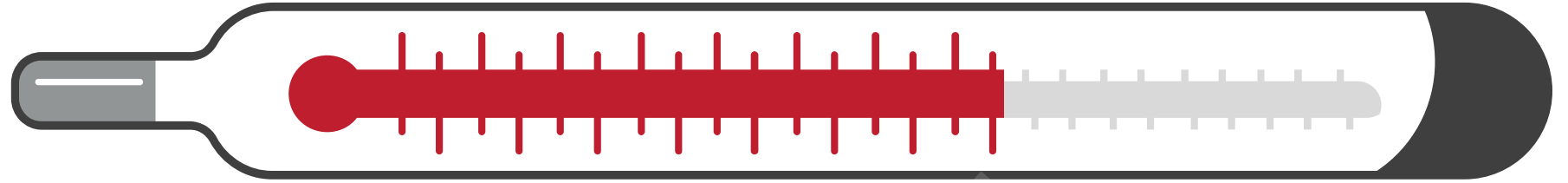


*Civil engineers have always vowed
to serve the general public.
Solving societal problems tirelessly
like a workaholic.*

*Civil engineers have saved more
lives than all the doctors in history
By developing clean water and
sanitation systems with no claim
to glory.*

*Civil engineering works of old and
present without exemption,
Reveals a history of inventive
genius and persistent
experimentation.*

PROBLEM STATEMENT



- **The novel coronavirus disease that emerged at the end of 2019 began threatening the health and lives of millions of people after a few weeks. Highly contagious with the possibility of causing severe respiratory disease, it has quickly impacted governments and public health systems.**
- **These situations have been responded by declaring a public health emergency of national and international concern, as well as by adopting extraordinary measures to prevent the contagion and limit the outbreak. Millions of lives have been significantly altered, and a global, multi-level, and demanding stress-coping-adjustment process is ongoing.**
- **The COVID-19 disease has now achieved pandemic status. The World Health Organization has issued guidelines for managing the problem from both biomedical and psychological points of view.**
- **During the past few months, this unprecedented pandemic has changed the world in so many ways in relation to society, health, safety, legal, economic, social, cultural, environmental and sustainability.**
- **COVID-19 has not only changed the way we live by bringing us closer together as a society, it has also disrupted financial markets including the professional engineering practices. One of the examples is the construction sector, even though the sector contracted a lot more during the 1985 and 1998 recessions, this time, however, no construction work is done at all.**
- **This situation is a different dynamic and we are currently in an uncharted territory.**

Task 1 (5%) (CO2-PO6)

As a group, identify a specific problem or a New Normal (WP4: Infrequently encountered issues) that have arisen during or due to the Movement Control Order (MCO) that have consequent responsibilities relevant to professional civil engineering practice (WP1: depth of knowledge and evaluate the infrequently encountered issue/problem under various circumstances related to economic, social, cultural, health, safety, legal, environmental and sustainability aspects towards providing effective solutions.

Task 2 (5%) (CO2-PO6).

As a group, identify with justification the technical, engineering and other issues (due to the rules and regulations of authorities, code of professional practices, health and safety regulations, etc.) (WK7) relevant to the problem or the new normal arising from the pandemic, supported by relevant and validated information (reports, press statement, online news etc.) (WK8) (WP5: Extent of applicable codes; WP2: conflicting requirements)

Task 3 (10%) (CO2-PO6)

As a group, propose an innovative Conceptual Civil Engineering solution to the problem or the new normal and elaborate on new relevant issues relating to professional engineering practices (PEP) for effective implementation of the proposed solution (WP3: Depth of analysis)

Task 4 (10%) (CO3 – PO8)

As a group, discuss in detail, potential ethical issues and professional misconduct (based on the code of conduct by professional bodies) among engineers when implementing your proposed solution

Tasks to be Carried Out



As an engineer, you are expected to apply reasoning, informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. In addition, you must be able to comprehend the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Task 5 (10%) (CO3-PO8)

Individual student is required to propose an individual solution on how to overcome the potential ethical and misconduct challenges identified in Task 4

Task 6 (10%) (CO4-PO6)

Individual student is required to identify the challenges that could be faced by the engineering professional bodies in implementing the proposed solution in Task 3, due to the rules and regulations imposed by the local and federal authorities (WP5: Extent of Applicable Codes).

Task 7 (10%) (CO4-PO6)

Individual student is required to propose how to overcome the challenges posed by the rules and regulations imposed by the authorities (WP6: Extent of Stakeholders)

Report

Group and Individual Submission
Note: You may apply a thinking process such as Design Thinking or any other Enquiry based thinking or critical thinking method. i.e. Design thinking process – Empathy, Define, Ideate, Prototype and Testing

7.0 Format of Report

a. General format:

- Font: Arial (size 11 single spacing)
- Individual reports for Tasks 5, 6 and 7 should be compiled together in the Group Report submission, with Names and Student ID written for each of the team member's individual report. There will be penalties (marks deduction) for plagiarism between individual team members report.

b. Specific format

The report must consist of the following sections:

Front Page – Names, UiTM no, Group, Name of Innovation (product, process, system)

Table of Contents

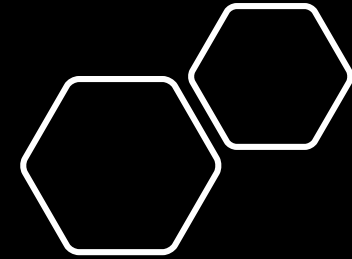
List of Tables & List of Figures

Summary or Abstract

Content of report shall be presented as follows:





- Chapter 1: Introduction/Background of Project - Identification and Evaluation of identified problems (Max. of 2 pages)
- Chapter 2: Identification and justification of standards and codes of practice relevant to the problem or a new normal (Max. of 1 page) & Highlighting and explaining the nature of conflict between the standards and codes of practice relevant to the problem or a new normal (Max. of 1 page)
- Chapter 3: Proposal of an Innovative conceptual Civil Engineering solution (Max. of 2 pages)
- Chapter 4: Elaboration of potential ethical issues and professional misconducts (Max. of 2 pages)
- Chapter 5: Individual proposal to solve the problem and justify (Max. of 2 pages/individual)
- Chapter 6: Identification of challenges faced by engineering professional bodies to implement the proposed solutions (max of 2 pages/individual)
- Chapter 7: Development of solution to overcome the challenges (Max. of 2 pages/individual)
- Chapter 8: Conclusions and Limitations (Max. of 1 page)
- References
- Appendices (if relevant)

FORMAT OF REPORT



Rubrics are provided for the assessment of all the task and they can also be accessed from the Google Classroom.

Performance Criteria Matrix Provided in Google Classroom

Turned in	
<input type="checkbox"/>  Ahssmaa Ezaetiy binti Moh...	48 <i>Draft</i>
<input type="checkbox"/>  Aiman Ghani	45 <i>Draft</i>
<input type="checkbox"/>  Ain Fatin	34 <i>Draft</i>
<input type="checkbox"/>  ain najwa	35.5 <i>Draft</i>

Task 3a: Proposal of an Innovative conceptual Civil Engineering solution ... Clear 5/5











Ability to propose an innovative Conceptual Civil Engineering solution (product/prototype/model, process, system) to the problem or the new normal (to resolve infrequently encountered issues) WP3: Depth of analysis - No obvious solution and require abstract thinking, originality in analysis to formulate suitable models

Excellent 5 pts	Good 4 pts	Acceptable 3 pts	Poor
Proposed a very innovative civil engineering solution with detail elaboration	Proposed a good innovative civil engineering solution with some elaboration	Proposed an acceptable innovative civil engineering solution with some elaboration	Proposed a poor innovative civil engineering solution with lack of elaboration

Task 3b: Elaborating on new relevant issues pertaining to the effective i... Clear 5/5

Ability to elaborate on new relevant issues relating to professional engineering practices (PEP) for effective implementation of the proposed solution (WP4: Familiarity of issues: Infrequently encountered issues)

Google Classroom

Descriptors

Depth of Knowledge Required = in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 (WK's) fundamental, first principles analytical approach	Analyse the problem using specified knowledge profile (WKs)	WP1 - MUST HAVE
	Evaluate the problems under such circumstance towards providing effective solution	
Range of Conflicting requirement = wide & conflicting technical, engr & other issues	Compare the conflicting technical, engineering and other issues to solve the problems	WP2
	Assess the conflicting requirements and provide a satisfactory proposal towards solving the problems	
Depth of analysis = no obvious solution, abstract thinking, originality	Develop the formulae/procedures to solve the problem using suitable models	WP3
	Justify creativity towards the achievement of the formulae/procedures	
Familiarity of issues = infrequently encountered issues	Differentiate the infrequently encountered issues in problem solving	WP4
	Select formula/procedures to resolve infrequently encountered issues	
Extent of applicable codes = outside problems encompassed by codes for professional engineering	Develop solution using standards and codes of practice for professional engineering	WP5
	Justify professional engineering experiences to resolve the problems	
Extent of stakeholder involvement and conflicting requirements = diverse groups of stakeholders with widely varying needs	Differentiate the diverse groups of stakeholders with widely varying needs	WP6
	Select stakeholder interests and requirements that give impact on the problem	
Interdependence = high level problems with many parts & sub-problems	Analyse high level problems including many component parts or sub-problems &	WP7
	Propose problem broken down into smaller components or sub-problems	

Performance Criteria Matrix based on Descriptors

Performance Criteria	Complex Engineering Problem Characteristics/ Taxonomy Level	Description of Performance Criteria				
		1	2	3	4	5
Task 1a: a. Identification of specific problem using relevant Knowledge Profiles (C02-P06)	WP1: Depth of Knowledge Required = in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 (WK's) fundamental, first principles analytical approach	Ability to identify a specific problem or a New Normal (WP4: Infrequently encountered issues) that have arisen during or due to the Movement Control Order (MCO) that have consequent responsibilities relevant to professional civil engineering practice (WK4-specialist knowledge, WK6 -Engineering Practices; WK7-comprehension and WK8 – literature research)				
		Demonstrate only two (2) or less specified of WKs	Demonstrates only three (3) specified WKs	Acceptable demonstration of all four (4) specified WKs	Good demonstration of all four (4) specified WKs	Excellent demonstration of all four (4) specified WKs
Task 1b. Evaluation of the identified problems (C02-P06)	WP4: Familiarity of issues: Infrequently encountered issues	Ability to evaluate the infrequently encountered issue/problem under various circumstances related to economic, social, cultural, health, safety, legal, environmental and sustainability aspects towards providing effective solutions.				
		No evaluation of any circumstance	Evaluate 1 circumstances with acceptable justification	Evaluate 2 circumstances with acceptable justification	Evaluate 3 circumstances with acceptable justification	Evaluate more than 3 circumstances with acceptable justification

Task 2a: Identifying and justifying standards and codes of practice relevant to the problem or new normal. (CO2-PO6)	WP5: Extent of applicable codes: outside problems encompassed by standards and codes of practice	Ability to identify with justification <i>the technical, engineering and other issues (due to the rules and regulations of authorities, code of professional practices, health and safety regulations, etc.)(WK7)</i> relevant to the problem or the new normal arising from the pandemic, supported by relevant and validated information (reports, press statement, online news etc.) (WK8)				
		1	2	3	4	5
		Lack of supporting sources (not valid and not relevant)	Supported by 2 sources literature search but not relevant and validated	Supported by 2 sources of literature search	Supported by 3 sources of literature search	Supported by more than 3 sources of literature search
Task 2b: Highlighting and explaining the nature of conflict between the standards and codes of practice relevant to the problem or new normal. (CO2-PO6)	WP2: Conflicting requirement Wide-ranging or conflicting technical, engineering and other issues	Ability to highlight and explain the nature of conflict between the technical, engineering and other issues (due to <i>the rules and regulations of authorities, code of professional practices, health and safety regulations, etc.</i>) relevant to the problem or new normal.				
		1	2	3	4	5
		Provide technical, engineering and other issues with poor explanation on the nature of conflict.	Provide technical, engineering and other issues with quite acceptable explanation on the nature of conflict between at least 2.	Provide technical, engineering and other issues with acceptable explanation on the nature of conflict between 2.	Provide technical, engineering and other issues with quite acceptable explanation on the nature of conflict between 3	Provide technical, engineering and other issues with quite acceptable explanation on the nature of conflict between more than 3.

Task 3a: Proposal of an Innovative conceptual Civil Engineering solution (CO2-PO6)	WP3: Depth of analysis No obvious solution and require abstract thinking, originality in analysis to formulate suitable models	Ability to propose an innovative Conceptual Civil Engineering solution (product/prototype/model, process, system) to the problem or the new normal (to resolve infrequently encountered issues)				
		1	2	3	4	5
		Proposed a non-civil engineering solution	Proposed a poor civil engineering solution with poor elaboration	Proposed an acceptable innovative civil engineering solution	Proposed a good innovative civil engineering solution with some elaboration	Proposed a very innovative civil engineering solution with detail elaboration
Task 3b: Elaborating on new relevant issues pertaining to the effective implementation of the proposed solution (CO2-PO6)	WP4: Familiarity of issues: Infrequently encountered issues	Ability to elaborate on new relevant issues relating to professional engineering practices (PEP) for effective implementation of the proposed solution				
		1	2	3	4	5
		Provide new issues but not relevant to PEP.	Provide at least 1 new issue relevant to PEP with brief elaboration,	Provide 2 new issues relevant to PEP with elaboration,	Provide 3 new issues relevant to PEP with elaboration	Provide more than 3 new issues relevant to PEP with elaboration

Task 4: Elaboration of potential ethical issues and professional misconducts (CO3-PO8)	C5 - Evaluation	Ability to elaborate in detail on potential ethical issues and professional misconduct (based on the code of conduct by professional bodies) among engineers when implementing your proposed solution				
		1	2	3	4	5
		Elaborate 1 ethical issue and professional misconduct	Elaborate 2 ethical issues and professional misconducts	Elaborate 3 ethical issues and professional misconducts	Elaborate 4 ethical issues and professional misconducts	Elaborate in detail more than 4 ethical issues and professional misconducts
Task 5: Individual proposal to solve the problem and justify (CO3-PO8)	C6 - Creation	Ability to propose an individual solution on how to overcome the potential ethical and misconduct challenges identified in Task 4				
		1	2	3	4	5
		Poor proposal with no justification	Acceptable proposal with poor justification	Acceptable proposal with justification	Good proposal with justification	Excellent proposal with clear justification

Task 6: Identification of the challenges that could be faced by the engineering professional bodies in implementing the proposed solution (CO4-PO6)	WP5: Extent of applicable codes: outside problems encompassed by standards and codes of practice	Ability to identify the challenges that could be faced by the engineering professional bodies in implementing the proposed solutions (in Task 3) due to the standards, code of practice, and rules and regulations imposed by the local and federal authorities				
		1	2	3	4	5
		Identified 1 challenge with no elaboration	Identified 2 challenges with some elaboration	Identified 3 challenges with acceptable elaboration	Identified 4 challenges with good elaboration	Identified more than 4 challenges with excellent elaboration
Task 7: Development of solution to overcome the challenges (CO4-PO6)	WP6: Extent of stakeholder involvement and conflicting requirements = diverse groups of stakeholders with widely varying needs	Ability to propose ways/means/solution to overcome the challenges posed by the rules and regulations imposed by the professional bodies, authorities and other stakeholders				
		1	2	3	4	5
		Stakeholders addressed but with no consideration of conflicting requirements	Stakeholders addressed but with brief explanation of conflicting requirements	2 Stakeholders addressed with detail explanation of conflicting requirements	3 Stakeholders addressed with detail explanation of conflicting requirements	More than 3 Stakeholders addressed with detail explanation of conflicting requirements

Moderation Process

1. Complex Engineering Committee
2. Head of Centre of Studies
3. Resource Person
4. Deputy Dean Academic/Dean

Quality Management System

- Second Examiner
- Course File Audit

10% from each Class randomly selected



GUIDELINE FOR INCORPORATING COMPLEX ENGINEERING PROBLEM FOR LECTURERS

BY FACULTY OF CIVIL ENGINEERING



Key in marks for PO attainment

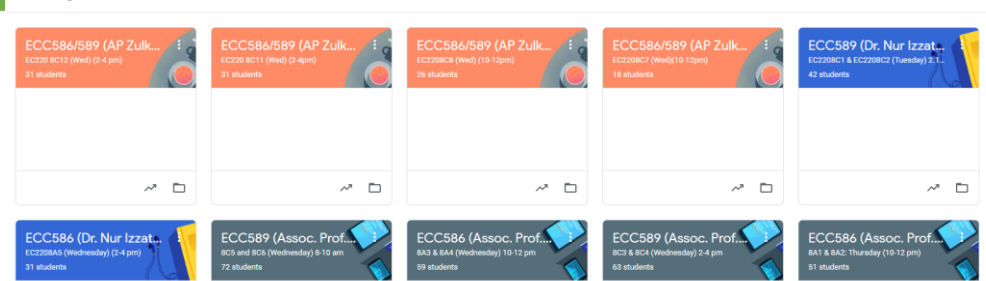
OBE System
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QUESTION NUMBER	QUESTION MARK	DESCRIPTION OF QUESTIONS (FINAL EXAM/ENGINEERING ACTIVITIES/ASSIGNMENT/PROJECT) IN RELATION TO WK, WP & EA. PLEASE REFER TO SHEET 3 FOR DESCRIPTORS OF WK/WP/EA	COURSE OUTCOMES (CO)	PROGRAMME OUTCOMES (WA/PO)	FINAL EXAMINATION/ASSIGNMENT/PROJECT																													
					COMPLEX PROBLEM SOLVING (CP) PLEASE TICK () RELEVANT WPs										ASSIGNMENT/PROJECT COMPLEX ENGINEERING ACTIVITIES (EA)							PLEASE TICK () RELEVANT GRADUATE ATTRIBUTES (VA) & KNOWLEDGE PROFILES (VK)												
					VA																													
					VK																													
					VP1	VP2	VP3	VP4	VP5	VP6	VP7	EA1	EA2	EA3	EA4	EA5	VA1	VA2	VA3	VA4	VA5	VA6	VA7	VA8	VK1	VK2	VK3	VK4	VK5	VK6	VK7	VK8	VK9	VK10

Google Classroom

3 lecturers
400 students
Lecturer 1 – Question 1, 2 and 7
Lecturer 2 – Question 3 and 6
Lecturer 3 – Question 4 and 5

Syndicated Marking



VER 4/April2020 (phakammy)

Examples of Submissions by Students on Conceptual Innovative Civil Engineering Solutions



Site Workers' Accommodation

3.1 Proposal of an Innovative Conceptual Civil Engineering solution

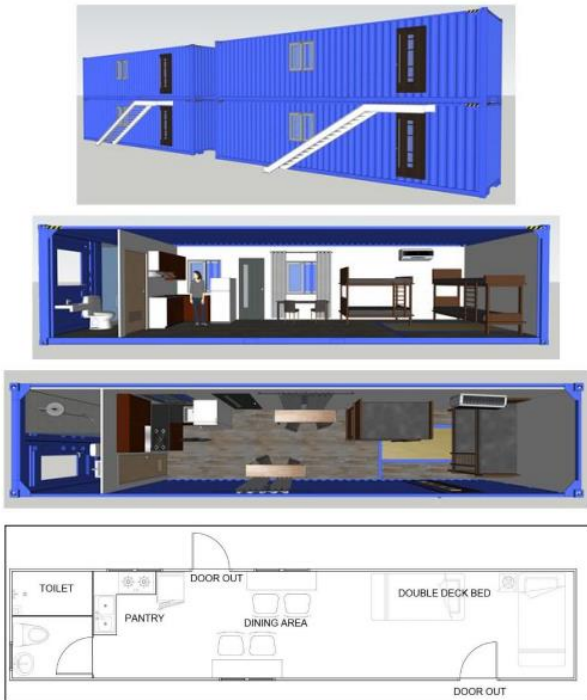


Figure 3.1: Innovative Conceptual Civil Engineering solution

Sanitization Tunnel at Construction Site

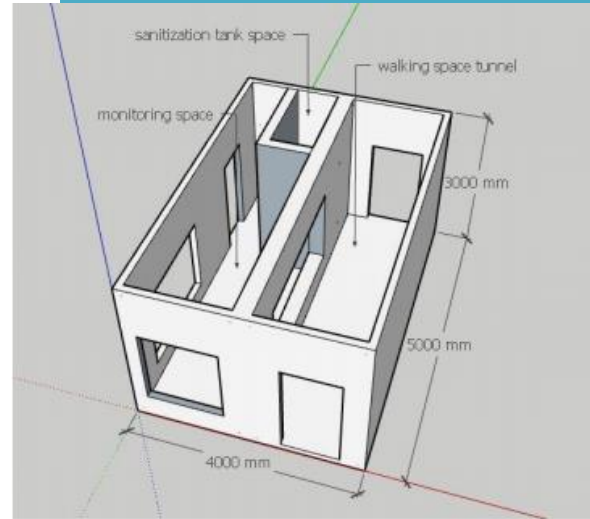


Figure 3.3: Structure of purposed sanitization tunnel. [ny.com](http://www.ny.com)
© 2017 The Worlody Power Joint Presentation.

Extension of Sick Bay in School

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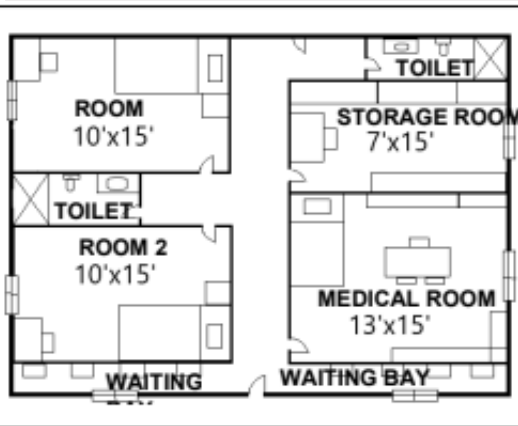


Figure 1: Sickbay Plan

Innovation in School Stairways



Figure 9: Front view of the school

- The following exercise is based on a flipped learning method where you were given the access to the PPT notes prior to the workshop and also based on your enhanced understanding after today's presentation.
- There are three short quizzes.
- You may provide the answer using the chat box in the zoom platform.

HANDS-ON ACTIVITY



on.

Assigned tasks to the students in ISP

As an engineer, you are expected to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice (PEP) and solutions to complex engineering problems. In addition, you must be able to comprehend the role of engineering in society and identified issues in engineering practice in the discipline: such as ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

The following are the specific tasks to be carried out for ISP:

1. As a group, identify **a specific problem or a New Normal** that have arisen during or due to the Movement Control Order (MCO) that have consequent responsibilities relevant to **professional civil engineering practice** and evaluate the encountered issue/problem under various circumstances related to economic, social, cultural, health, safety, legal, environmental and sustainability aspects towards providing effective solutions.
2. As a group, identify with justification the technical, engineering and other issues (due to the **rules and regulations of authorities, code of professional practices, health and safety regulations**, etc.) relevant to the problem or the new normal arising from the pandemic, supported by relevant and validated information (reports, press statement, online news etc.)
3. As a group, propose an innovative Conceptual Civil Engineering solution to the problem or the new normal and elaborate **on new relevant issues relating to professional engineering practices (PEP)** for effective implementation of the proposed solution.
4. As a group, discuss in detail, **potential ethical issues and professional misconducts** (based on the code of conduct by professional bodies) among engineers when implementing your proposed solution.
5. Individual student is required to propose an individual solution on how to **overcome the potential ethical and misconduct challenges** identified in Task 4
6. Individual student is required to identify the challenges that could be faced by the engineering professional bodies in implementing the proposed solution in Task 3, due to the **rules and regulations imposed by the local and federal authorities**
7. Individual student is required to propose how to **overcome the challenges posed by the rules and regulations** imposed by the **authorities and other relevant stakeholders**

Question 1

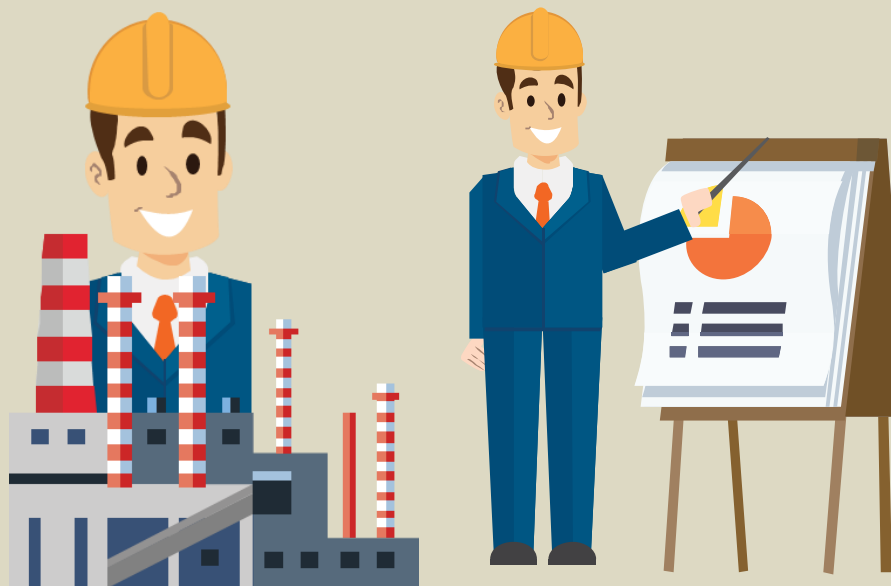
What are the programme outcomes addressed in this Engineers in Society course?

- A. PO 6 (Engineers & Society)
- B. PO 8 (Ethics)
- C. PO6 & PO8

- Answer - C

PO6: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems (WK7)

PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice (WK7)



Question 2

What is the Knowledge Profile required in both programme outcomes (PO6 & PO8)?

- A. WK1 (Natural Sciences)
- B. WK2 (Mathematics)
- C. WK7 (Comprehension)

- Answer: C

WK7: Comprehension of the role of engineers in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability.

Question 3

In one of the tasks, an individual student is required to identify the challenges that could be faced by the engineering professional bodies in implementing the proposed engineering solution, due to the rules and regulations imposed by the local and federal authorities or other relevant stakeholders.

Choose WPs that maybe relevant to be incorporated in the above task?

- i. WP2 – Conflicting Requirements
- ii. WP5 – Applicable Codes
- iii. WP6 –Stakeholders’ Involvement
- iv WP7 – Interdependence

- A. i & iv
- B. ii & iii
- C. i, ii & iii
- D. All

- Answer: C
- There are many stakeholders involved with various requirements and varying needs which might be conflicting due to the law, rules and regulations (codes) imposed by these stakeholders.

THANK YOU FOR YOUR ATTENTION

References

EAC/ETAC Standard 2020, Board of Engineers Malaysia

Webinar on Alternative Assessment : Adherence to WP and EA on 6 Jul 2020

Workshop On Complex Engineering Problem Solving (WP) And Complex Engineering Activities (EA) on 1 Aug 2019

Other relevant workshops



eac@bem.org.my
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chema982@uitm.edu.my/ HP: 60196204707