University of Bedfordshire

Unit Information Form (UIF)

(The UIF provides the definitive record of the designated Unit)

SECTION A

General Unit Information

Unit Name	**Engineering Design Project**
Unit Code	
Level	FHEQ 6
Credit Value	15
Location(s) of Delivery	Off Campus, STI Myanmar University (Yangon and Mandalay campus)
Period(s) of delivery	Semester 1
Pre-requisites or Restrictions	
Aims and Relevance	This unit aims to involve the students with the process of engineering project development from planning to conception through to detailed design presentation to the client, whilst working within a collaborative project team. The students will integrate the design function and process in relation to taught units in the core subjects. They will develop qualitative skills in connection with efficient construction, planning and feasibility studies. This unit develops students' skills in the communication of collaborative construction design ideas. The students will work in teams and promote their social and interpersonal skills, leadership and responsibilities as appropriate within their group dynamics. The students will apply their wider engineering skills in construction design management as well as dealing with environmental and safety issues.
Syllabus Content	1. Design Brief 2. Constraints 3. Sustainability, Environment, Economic, Aesthetics 4. Health and Safety Risk Management 5. Group Dynamics (Belbin) 6. Design Procedures 7. Construction Design Management 8. Communication and presentations

Learning outcomes

On completion of this unit you should be able to:

1. Demonstrate the following knowledge and understanding

    - Work effectively and professionally within a team to contribute to a complex design process and solution; working with the constraints and issues of sustainability, finance, quality control and aesthetics, problem solving to meet client requirements

2. Demonstrate the following skills and abilities

    - Identify and analyse the complex situations of engineering projects and find the optimum design solution through qualitative and quantitative design procedures to meet the design brief considering the sustainability, health, safety and risk management.

PSRB outcomes

Indicate any specific Professional, Statutory or Regulatory Body (PSRB) requirements met by this unit.

UK Standard for Professional Engineering Competence (UK-SPEC): AHEP3 IEng Learning Outcomes: D1i, D2i, D3i, D4i, D6, EL1, EL6i, P6i, P11i, G1, G4i

Joint Board of Moderators (JBM) Core Threads - Primary Outcomes (assessed and evidenced):

Design, Sustainability, Health and Safety Risk Management, Professionalism and Ethics

Summary learning hours

	Scheduled	Guided	Independent	Autonomous	Placement	Total
Hours	53	27	60	10	0	150
Percentage	35.3%	18.0%	40.0%	6.7%	0%	**100%**

Approach to learning

This unit will permit the students to demonstrate their interpersonal skills whilst working with others in collaborative fashion, team dynamics will be identified and applied to collaborative engineering design approach, working through sketch to final detail design and presenting the efficient solution to clients.

Learner development

This Unit particularly focuses on the development of your abilities in the following areas:

Enquiry	You will research the proposed site of a given engineering project to collect the required data and identify the problems.
Contextual understanding	You will analyse the problems of the project and try to solve the complex situations in order to reach the feasible design solution.
Collaboration	You will work independently and in groups having identified your role and contribution towards the appropriate and efficient solutions.
Enterprise	You will present your ideas through a developmental portfolio for formative assessment, which demonstrates your creative ideas trying to meet the user requirements resolving the sustainability, health, safety and risk issues holding the high level of professionalism and ethics working with relevant code of practice.

Assessment summary

No	Assessment Method Code[1]	Learning outcome(s)	Weight %	Submission week	Length (of exam)	Exemption from Simplified Marking Scheme approved[2]
1	CW-PO	1&2	100	15		

Assessment details

Assessment 1. Coursework portfolio. The group project portfolio will document the process of a given engineering project development from planning to detailed design, working within a project team. Students will attend weekly supervised sessions and are expected to make weekly contributions to the portfolio which will be presented and discussed in class. The portfolio should include sketches, drawings, models, calculations, analyses, notes of client meetings and records of site visits. The developed design should include software-generated drawings.

The coursework comprises the following components:

1. Masterplan (20%)
2. Conceptual Scheme Design (20%)
3. Developed Design (40%)
4. Group Visual Presentation (week 15): 20%

Students will make a 15 minute group presentation on their developed design to peers and invited members of the Industrial Advisory Board and/or other industry representatives. Students will each present a short defence of the developed design solution. Presentations will be double marked and recorded for internal and external moderation. The presentation will carry 15% of the total marks.

[1] See the UIF Guide for permissible codes

[2] Exemptions can only be granted by TQSC. The types of assessment task that can request an exemption are detailed in Chapter 8 of the Quality Handbook

Threshold expectations

In order to pass Assessment 1 you will need to:

- Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics. (contributing to D1i)
- Define a problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues, codes of practice and standards. (contributing to D2i; P6i)
- Work with information that may be incomplete or uncertain and be aware that this may affect the design. (contributing to D3i)
- Apply problem-solving skills, technical knowledge and understanding to create or adapt design solutions that are fit for purpose including operation, maintenance, and reliability. (contributing to D4i)
- Communicate work to technical and non-technical audiences. (contributing to D6)
- Understand the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct. (contributing to EL1)
- Show an awareness of risk issues, including health and safety, environmental and commercial risk. (contributing to EL6i)
- Be aware of team roles and the ability to work collaboratively as a member of an engineering team; exercise personal responsibility as a team member. (contributing to P11i; G4i)
- Ability to apply skills in problem solving, communication, information retrieval, working with others collaboratively and the effective use of general IT facilities. (contributing to G1; G4i)
- Present your work in a professional manner to “client”, clearly demonstrating your/group approach to problem solution, and recommend solutions based on appropriate selection and also on economic and environmental impact. (contributing to D6; G1)

SECTION B

Recommended Reading

Core text – this unit is supported by the following core text:

- Health & Safety Executive (2015). *Managing health and safety in Construction: Construction (Design and Management) Regulations 2015*. ISBN: 9780717666263. Accessed 13 03 2020: https://www.hse.gov.uk/pubns/priced/l153.pdf

Guided reading – the following is expected reading for this unit. Details of what to read and when will be provide in the BREO site.

- Barber, J. and Institution of Civil Engineers (2002). *Health & Safety in Construction: Guidance for Construction Professionals.* London: Thomas Telford.

- IPA, ISBA, MCCA, PRCA. (2004). *The Client Brief: A best practice guide to briefing communications agencies*, London.
- Johnson, A. & Gibson, A. (2014). *Sustainability in Engineering Design*. Waltham, MA. Elsevier.
- Lawson, B. (2005). *How Designers Think: The Design Process Demystified*. London: Routledge.
- McCuen, R., & Gilroy, K. (2011*). Ethics and Professionalism in Engineering*. Warriewood, NSW: Broadview Press.
- Petroski, H. (1992). *To Engineer is Human: The Role of Failure in Successful Design*. New York, NY: Vintage Books.
- White, J. (2018). *Health and Safety Management*. Boca Raton, FL: CRC Press.

Independent study – to receive high grades you will need to demonstrate your wider reading. The following resources provide useful background reading for the material in this unit. This is not an exhaustive list and students should read widely from the variety of journals available in the Learning Resources Centre

- http://www.clientbrief.info/Home.htm

- Addis, B. (2007). *Building: 3,000 Years of Design, Engineering and Construction*. 1st ed. Phaidon Press.
- Berge, B. (2009) *The Ecology of Building Materials*. 2nd ed. Abingdon: Routledge.
- Gekivorkian, P. (2010). *Alternative Energy Systems in Building Design*. London: McGraw-Hill.
- Khatib, J. (2016). *Sustainability of Construction Materials*. 2nd ed. Duxford, Cambridge: Woodhead Publishing.
- Thomas, R. (ed.) (2006). *Environmental design: An Introduction for Architects and Engineers*. 3rd ed. London: Taylor & Francis.
- Yudelson, J. (2008) *Green Building Through Integrated Design*. London: McGraw-Hill.

Equality Impact Assessment

Question	***Y/N/NA***	***Additional anticipatory adjustments/actions if necessary***
Learning materials will be made available in advance of sessions for students to adapt as appropriate?	Y	As new materials are developed, they may be the only ones that may not appear earlier than the session or the materials developed during the sessions, like sun charts, etc.
The approach to teaching and learning is sufficiently flexible to enable all students to succeed?	Y	
The approach to group work takes account of the needs of students with disabilities and from diverse backgrounds?	Y	
The approach to practical work takes account of the needs of students with disabilities?	Y	
Students with a protected characteristic[3] have an equal opportunity to achieve the learning outcomes?	Y	
The assessment tasks provide all students with an equal opportunity to succeed?	Y	
Any other aspects of the unit that might pose potential challenges from an equality or diversity perspective have been considered?	NA	

[3] Age, Gender reassignment, Marriage and civil partnership, Pregnancy and maternity, Race, Religion and belief, Sex, Sexual orientation

SECTION C

Administrative Information – Faculty completion	
Faculty	
Portfolio	
School/Department	**School of Computer Science and Engineering**
Unit Co-ordinator	Dr. Nyein Zin Latt
Version Number	1/2020
Approved by	
Date of approval (dd/mm/yyyy)	

Shared Units – Indicate below all courses which include this Unit in their diet
BEng Hons Civil engineering
BEng Hons Civil & Architectural Engineering

	Name	**Date**
Form completed by	Dr. Nyein Zin Latt/	February 2020
Signature of Chair of Faculty TQSC *to confirm the accuracy of information presented*		

Unit Updates – ensure that the revised UIF is given a new version number each time a change is made		
Date	**Nature of Update**	**FTQSC Minute Ref:**

Administrative Information – Academic Registry completion	
JACS / HECoS code (KIS)	