

INBOND VIRTUAL MOBILITY PROGRAMME FKAAB UTHM

SEMESTER I 2020/2021 (START ON 11 OCTOBER 2020)

OFFERED SUBJECTS:

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BFC 21702 Geotechnics I

SYNOPSIS:

Geotechnical engineering is the branch of civil engineering concerned with the engineering behavior of earth materials. Geotechnical engineering includes investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties that are relevant to the project considered. This course introduces to student basic properties of soil, classification of soil and also behaviour of soil. Student also can analyze problem occur in soil and proposed solution for each problem. The scopes of this course are composition and soil classification, soil compaction, permeability, soil shear strength and in situ stresses.

REFERENCES:

- 1 Das, Braja M. (2010), "Principles Of Geotechnical Engineering, (7th Edition)", Thomson, Canada. (Library shelf number: TA 710.D37 2010)
- 2 Budhu, M. (2007), "Soil Mechanics & Foundations (2nd. Edition)", John Wiley & Sons, Inc., United States of America. (Library shelf number: TA 710.B83 2007)
- 3 Shroff, Arvind V. and Shah, Dhananjay L. (2003), "Soil Mechanics and Geotechnical Engineering", A. A. Balkema, Netherlands. (Library shelf number: TA 710.S57 2003)
- 4 Coduto, Donald P., Yeung, Man-Chung, and Kitch, William A. (2011), "Geotechnical Engineering: Principles and Practices", Upple Saddle River, Pearson. (Library shelf number: TA 705.C82 2011)

BFC 21403 Structure Analysis

SYNOPSIS:

Structural analysis is one of the important aspect need to be studied before designing the structure. This course introduces student to the concept of structural analysis of elastic and inelastic behavior

of trusses, beams and frames. Scope of the study includes deformable of statically determinate and indeterminate structure, influence line and plastic analysis.

REFERENCES:

- 1 Hibbeler, R.C.; Structural Analysis; 8th Edition"; Prentice Hall; USA; 2012. [TA645 .H52 2012]
- 2 Kenneth M. Leet, Chia-Ming Uang and Anne M. Gilbert; Fundamentals of Structural Analysis; 3th Edition; Mac-Graw Hill; 2008. [TA645 .L34 2008]
- 3 Jack C. McCormac; Structural Analysis: Using Classical and Matrix Methods; Wiley; 4th edition; 2007. [TA645 .M36 2007]
- 4 Kassimali.A.; Structural analysis; Thomson; 4th Edition; 2005.[TA645 .K37 2005]
- 5 A. Ghali, A. M. Neville and T. G. Brown; Structural Analysis: A Unified Classical And Matrix Approach; Spon; 2009. [TA645 .G42 2009]
- 6 Megson, T. H. G.. Structural and Stress Analysis, Elsevier Science & Technology, 2014. ProQuest Ebook Central, <https://ebookcentral-proquest-com.ezproxy.uthm.edu.my/lib/uthm-ebooks/detail.action?docID=5754476>.

BFC 32403 Environmental Engineering

SYNOPSIS:

Scope of environmental problem. Population and economic growth. Environmental effect. Effects on energy consumption. Effects of human activities to environment. Environmental chemistry. Microbiology. Ecology. Natural water purification. Water treatment and supply. Water pollution and wastewater treatment. Solid waste management

REFERENCES:

- 1 Davis, M.L. and Cornwell, D.A. (2013). Introduction to Environmental Engineering, 5th Ed., McGraw-Hill. TD145. D384 2013
- 2 De, Anil K. and De, Arnab Kumar (2009). Environmental Engineering, New Delhi : New Age International., E-Book.
<http://web.a.ebscohost.com.ezproxy.uthm.edu.my/ehost/detail/detail?vid=0&sid=7bc9e3d0-693e-4d47-866c-0efadba72da1%40sessionmgr4008&bdata=JnNpdGU9ZWwhvc3QtG12ZSZzY29wZT1zaXRl#db=nlebk&AN=272090>
- 3 Mackenzie L. Davis and Susan J. Masten (2008). Principles of Environmental Engineering and Sciences, New York: McGraw-Hill.TD145.D38 2008
- 4 Gilbert M. Masters and Wendel P.Ela (2008). Introduction to Environmental Engineering and Sciences, 3rd Edition. New Jersey: Pearson Prentice Hall.TD 145.M37 2008
- 5 Jerry A. Nathanson (2003). Basic Environmental Technology , 4th Edition. New Jersey.Prentice Hall. TD 145. N37 2003
- 6 P. Aarne Vesilinda and Susan M Morgan (2004). Introduction to Environmental Engineering , 2nd Edition. USA: Thomson. TD145. V47 2004

BFC 31802 Highway Engineering

SYNOPSIS:

This Highway Engineering course is intended for undergraduate students in civil engineering. The course will provide an essential engineering knowledge in highway engineering which covers the necessary fundamentals needed for practitioners at the entry level to industry. This course

introduces students to the application of highway engineering as part of civil engineering design, construction and maintenance works. In line with its main task, the scope of this course covers central topics, ensuring an adequate grasp of theoretical concepts of highway materials, pavement design, highway construction, highway drainage and pavement maintenance.

REFERENCES:

- 1 Garber N.J, Hoel L.A., (2002), Traffic and Highway Engineering (3rd Edition), California, Brooks/Cole.
- 2 Wright P.H & Dixon K.K., (2004), Highway Engineering (7th Edition), John Wiley & Sons (New York).
- 3 Flaherty C.A., (2002), The Location, Design, Construction & Maintenance of Pavements (4th Edition), Butterworth Heinemann, United Kingdom.
- 4 Rogers M, (2008), Highway Engineering (2nd Edition), Blackwell Publishing. United Kingdom.
- 5 Rogers M, (2008), Highway Engineering (2nd Edition), Blackwell Publishing. United Kingdom.
- 6 Huang, Yang H., (2004), Pavement Analysis and Design (2nd Edition), Pearson, Prentice Hall, USA.
- 7 Huang, Yang H., (2004), Pavement Analysis and Design (2nd Edition), Pearson, Prentice Hall, USA.
- 8 Jabatan Kerja Raya Malaysia, Interim Guide to Evaluation and Rehabilitation of Flexible Road Pavements, Ibu Pejabat JKR, Kuala Lumpur, 1994.
- 9 Jabatan Kerja Raya Malaysia, A Guide to Visual Assessment of Flexible Pavement Surface Conditions, Ibu Pejabat JKR, Kuala Lumpur, 1992.
- 10 Jabatan Kerja Raya Malaysia, Standard Specification for Road Works, Ibu Pejabat JKR, Kuala Lumpur, 2008.
- 11 Road Engineering Association of Malaysia, Guidelines to the Design of Plain Concrete Pavement, Ibu Pejabat REAM, Selangor, 2004.
- 12 Road Engineering Association of Malaysia, Guidelines For Road Drainage Design, Vol. 1 -5, Ibu Pejabat REAM, Selangor, 2004.
- 13 Jabatan Kerja Raya, Arahan Teknik (Jalan) 5/85, Manual On Pavement Design, Ibu Pejabat JKR, Kuala Lumpur,
- 14 Jabatan Kerja Raya, Arahan Teknik (Jalan) 5/85 (Pindaan 2013), Manual On Pavement Design, Ibu Pejabat JKR, Kuala Lumpur.
- 15 Jabatan Kerja Raya, Addendum STJ 5/85 (Pindaan 2013): Manual for the structural Design of Flexible Pavement (Surat Arahan KPKR Bil 28/2017), Ibu Pejabat JKR, Kuala Lumpur.

BFC 44602 Engineering Economy

SYNOPSIS:

This course is aimed to expose students to the application of economic techniques to the evaluation of design and engineering alternatives. Students should be able to assess the appropriateness of a given project, estimate its value, and justify it from an engineering standpoint.

REFERENCES:

- 1 Blank, L.T., A. Tarquin (2008): Basics of Engineering Economy, International ed., McGraw-Hill, New York, Call Number TA 177.4 B524 2008
- 2 Mohamad Sirin, R. (2007): Teori Asas Ekonomi Kejuruteraan, Faculty of Technology Management KUiTTHO. Malaysia. Call Number: TA177.4 R67 2007
- 3 Blank, L.T., A. Tarquin (2012): Engineering Economy, Seventh Edition, International ed., McGraw-Hill, New York
- 4 Sullivan W.G, Wicks E.M. and Koelling C.P, (2012). Engineering Economy, 15th Edition, Upper Saddle River, New Jersey, Pearson. Call Number: TA 177.4 S94 2009

- 5 Park, C. S. (2007). Contemporary Engineering Economics, 4th Edition, Upper Saddle River: New Jersey, Prentice Hall Call Number: TA177.4 P372 2007
- 6 John A.W, Kenneth E.C, David B.Pratt (2010), Principles of engineering economic analysis, 5th edition, Hoboken, NJ : John Wiley. Call Number: TA177.4 .W44 2010
- 7 Ardalan, Abol (2000), Economic and Financial Analysis for Engineering and Project Management, Lancaster, Penn : CRC Press. 2000. eBook.
- 8 Couper, James R. (2003), Process Engineering Economics, Series: Chemical Industries, Vol. 97. New York : CRC Press. 2003. eBook.

BFC 43502 Occupational Health and Safety

SYNOPSIS:

This course introduces students to the study of workplace occupational safety and health. The student will learn about legislations related to OSH, OSH management at the workplace and safety culture. The scopes of the study also include risk assessment and management, as well as safety and health hazards involved at the workplace and their control measures. The student will also learn about the incident investigation technique and incident prevention.

REFERENCES:

1. Occupational Safety and Health Act (OSHA 1994) and Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.M34 2001 rw N2.
2. Factories and Machinery Act (FMA 1967) & Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.A31967 .A4 2001 rw N1.
3. Goetsch, David L. (2013). Construction Safety and Health. 2nd Edition. Boston: Pearson. Call number: TH443 .G63 2013
4. Kelloway, E. Kevin. (2014). Management of Occupational Health and Safety.
5. Ferret, E. (2012). Health and Safety in Construction Revision Guide. Abingdon, Oxon: Routledge. [HD7262.5 .F47 2012].

BFC 43103 Foundation Engineering

SYNOPSIS:

This course covers numerical solutions to solve nonlinear equations, system of linear equations, polynomials; numerical differentiation and integration, eigen value, ordinary differentiation and partial differentiation equations, and an introduction to one dimensional finite element problem.

REFERENCES:

- 1 Braja M Das. (2017) Principles of Foundation Engineering(Ninth Edition); Brooks/Cole Publishing Co.(Library shelf number: TA 775.D37 2011)
- 2 Joseph E. Bowles. (1996) Foundation Analysis and Design; The McGraw Hill Co. (Library shelf number: TA 775.B68 1996)
- 3 Muni Budhu. (2007) Soil Mechanics and Foundations. Hoobeken, NJ., John Wiley. (Library shelf number: TA 710.B83 2007)
- 4 Muni Budhu. (2008) Foundations and Earth Retaining Structure. Hoobeken, NJ., John Wiley. (Library shelf number: TA 710.B82 2008)

BFP 40603 Industrialized Building System (Elective)**SYNOPSIS:**

Prefabricated construction is known as an Industrialized Building Systems (IBS) in Malaysia. Building production in a controlled environment offers many advantages. This course is designed to expose students on the IBS concepts, IBS development in Malaysia, benefits, IBS technology and its application in the construction industry. It also highlights IBS scoring system, principal of modular coordination, and principles of designing the precast concrete frame. Students are required to complete a project to enhance their knowledge on subject matter.

REFERENCES:

- 1 Elliott, Kim S.; Precast concrete structures; Oxford : Butterworth Heineman; 2002; Call Number :TA683.7 .E44 2002 N1
- 2 Bachmann, H.; Precast concrete structures; Berlin : Ernst & Sohn; 2011; Call Number: TH1498 .B32 2011
- 3 Elliott, Kim S.; Multi-storey precast concrete framed structures; Chichester, West Sussex, UK : Wiley-Blackwell, 2013; Call Number: TH1498 .E54 2013
- 4 Smith, Ryan E.; Prefab architecture : a guide for to modular design and construction ; Hoboken, N.J. : John Wiley & Sons; 2010; Call Number : NA8480 .S65 2010
- 5 Minguet, Josep Maria; Contemporary green prefab: industrialized & kit architecture; Singapore; Page One Pub.; 2012; Call Number : NA7145 .C66 2012
- 6 Prefabricated Systems : Principles of Construction: <https://ebookcentral-proquest-com.ezproxy.uthm.edu.my/lib/uthm-ebooks/reader.action?docID=1020517&ppg=1>

BFP 40103 Construction Planning and Scheduling (Elective)**SYNOPSIS:**

Construction planning is fundamental and challenging activity in the management and execution of construction projects. Scheduling, on the other hand is the process selecting appropriate tools to communicate what needs to be performed, time frames and resources involved. This course provides knowledge for students to develop an effective work programme for a construction project. Main topics discussed in the course are Work Breakdown Structure, Principal of Planning and Scheduling Method, Monitoring and Controlling Method, Resource Leveling, Crashing Program, Programme Evaluation and Review Technique (PERT) and Linear Scheduling Method.

REFERENCES:

- 1 Kerzner, Harold (2017). Project Management - A Systems Approach to Planning, Scheduling, and Controlling (12th Edition). [eBook]. Access through UTHM's Library Database.
- 2 Andrew Baldwin and David Bordoli. (2014). A Handbook for Construction Planning and Scheduling. Chichester, West Sussex, UK. Wiley Blackwell. Online version: WorldCat. Access through UTHM's Library Database.
- 3 Clough, R.H dan Sears, S.K; Construction Project Management: A Practical Guide To Field Construction Management (5th Ed.); New York: John Wiley, 2008. Call 4. Gould, F.E dan Joyce, E.N; Construction Project Management (3rd Ed.); Upper Saddle River: Prantice Hall, 2009. Call Number : TH438. G68 2009.
- 4 Gould, F.E dan Joyce, E.N; Construction Project Management (3rd Ed.); Upper Saddle River: Prantice Hall, 2009. Call Number : TH438. G68 2009.
- 5 Hinze, Jimmie W; Construction Planning and Scheduling, (3rd Ed.); Upper Saddle River. Pearson, 2008. Call Number : TH438.4. H56 2008.

BFC 43201 Civil Engineering Software Application**SYPNOSIS:**

The civil engineering software such Esteem, Staad-Pro, HEC-RAS, WASDA and Microsoft Project are essential in civil engineering project. The ability in increasing the performance of project scheduling makes this technology important to understand by civil engineer. This course introduces students to applications of civil engineering software starts from the beginning in planning the project schedule until to produce the final result of designing civil project. Scope of the study includes the techniques and variables required in using the reinforced concrete design software: Esteem, analysis and structure design software: Staad Pro, project management software: Microsoft Project, river analysis system application: HEC-RAS and waste water treatment plant design: WASDA.

REFERENCES:

- 1 Esteem Structural Analysis, Design & Detailing Softwares User Manual; Esteem Innovation Sdn. Bhd.; 2001.
- 2 HEC-RAS Software User Guide; Hydrologic Engineering Center; USA; 2006.
- 3 Microsoft Project 2010 Bible; Elaine Marmel, Wiley Publishing Inc., Indiana, 2010.].