



UNIVERSITI TEKNOLOGI MARA

BCM514: CONSTRUCTION TECHNOLOGY III

<b>Course Name (English)</b>	CONSTRUCTION TECHNOLOGY III <b>APPROVED</b>
<b>Course Code</b>	BCM514
<b>MQF Credit</b>	4
<b>Course Description</b>	The general aim of the course is to provide sufficient knowledge and understanding of other works related to building construction. The course covers the element of earthworks, land reclamation, slope stabilization, retaining walls and soil improvement, with emphasis on the technology and installation of the element.
<b>Transferable Skills</b>	Intermediate construction technology skill Teamwork skill Information Management Skill Communication Skill
<b>Teaching Methodologies</b>	Lectures, Blended Learning, Lab Work, Tutorial, Presentation
<b>CLO</b>	CLO1 Evaluate general planning, design consideration and construction method of earthworks; slope stabilization, retaining walls and soil improvement. CLO2 Demonstrate on specific soil mechanic test through various procedures. CLO3 Demonstrate excellent working culture in planning and design consideration of earthworks; slope stabilization, retaining walls and soil improvement.
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Earthworks</b> 1.1) Introduction 1.2) General consideration & planning 1.3) Bulking & shrinkage 1.4) Areas & volumes 1.5) Design aspects of earthwork structures 1.6) Earthwork plants/equipments 1.7) Earthwork processes: excavation/digging, transporting/hauling, placing & spreading, compaction 1.8) Scheduling of earthwork 1.9) Mass haul diagram.	
<b>2. Drainage</b> 2.1) Introduction 2.2) General planning and design consideration 2.3) Types of drainage e.g. Surface Drainage, Sub soil Drainage 2.4) Drainage construction	
<b>3. Dredging</b> 3.1) Introduction 3.2) General planning and design consideration 3.3) Types of dredging 3.4) Method of dredging	
<b>4. Slope Stabilization and Retaining Walls</b> 4.1) Introduction 4.2) Slope stability concepts 4.3) Slope failures 4.4) Selection of stabilization methods 4.5) Slope stabilization methods: unloading, buttressing, drainage, reinforcement, retaining walls, vegetation, surface slope protection, soil hardening, rock slope stabilization methods 4.6) Maintenance of slope	

**5. Soil Improvement**

- 5.1) Introduction
- 5.2) Types of unstable soil in Malaysia: marine deposits, inland valley deposits, ex- mining soil, fill soil
- 5.3) Problems of unstable soil
- 5.4) Method of soil improvement: preloading & vertical drain, vibro- compaction, dynamic compaction, grouting, geo-textiles etc.
- 5.5) Selection of soil improvement method.

**6. Soil Stabilization**

- 6.1) Methods of classic soil stabilization with cement and lime
- 6.2) Understand the reaction mechanism that occurs during modification and stabilization processes.

**7. Soil Mechanical**

- 7.1) Soil formation and nature
- 7.2) Soil description and classification
- 7.3) Clay Mineralogy
- 7.4) Permeability and seepage

Assessment Breakdown	%
Continuous Assessment	40.00%
Final Assessment	60.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	n/a	25%	CLO1
	Attendance	Observation	5%	CLO3
	Lab Exercise	n/a	10%	CLO2

Reading List	Recommended Text	Reference Book Resources
	<ul style="list-style-type: none"> <li>• Smolczyk U, 2003, <i>Geotechnical Engineering Handbook Volume 1, 2 &amp; 3</i>, Ernst &amp; Sohn.</li> </ul>	<ul style="list-style-type: none"> <li>• Chudley, R &amp; Greeno, R, 2008, <i>Advanced Construction Technology</i>, 4th Ed., Pearson Education Limited.</li> <li>• Chudley, R &amp; Greeno, R, 2008, <i>Building Construction Handbook</i>, 7th Ed., Butterworth Heinemann Publication</li> <li>• Foster J.S &amp; Harington R, 2007, <i>Structure and Fabric 1 &amp; 2</i>, 7th Ed., Longman.</li> <li>• D. Eisma, 2006, <i>Dredging in coastal waters</i>, London Taylor &amp; Francis</li> <li>• Illingworth J.R, 2000, <i>Construction Methods and Planning</i>, E &amp; FN Spon.</li> <li>• Barnes G E 2000, <i>Soil Mechanics Principles and Practice</i>.</li> <li>• Woolley L, 1999, <i>Drainage details</i>, London E &amp; FN</li> <li>• Nunnally S, 1998, <i>Construction Method and Management</i>, 4th Ed., Prentice-Hall.</li> <li>• Bray, R.N., <i>Dredging : a handbook for engineers</i>, Oxford: Butterworth Heinemann</li> <li>• Ratay R.T, 1996, <i>Handbook of Temporary Structures in Construction</i>, 2nd Ed., McGraw-Hill.</li> <li>• Walton, D. 1995, <i>Building Construction: Principles and Practices</i>, Macmillan Education Limited.</li> </ul>
<b>Article/Paper List</b>	This Course does not have any article/paper resources	
<b>Other References</b>	This Course does not have any other resources	