

Full Title:	Materials Technology 2
Language of Instruction:	English
Module Code:	MTRL I7003
Credits:	5
Valid From:	Semester 1 - 2014/15 (September 2014)
Module Delivered in	2 programme(s)
Module Description:	The function of this module is to broaden the students knowledge of concrete, steel and bituminous materials, enabling the student to design concrete mixes; to be competent at specifying and supervising concrete construction; to be competent at specifying and supervising the use of bituminous materials and broaden their knowledge of the performance of structural steel and steel reinforcement
Learning Outcomes:	
<i>On successful completion of this module the learner should be able to</i>	
<ol style="list-style-type: none"> 1. Prepare various concrete mixes based on a knowledge of the characteristics of concrete and the function it is to perform 2. Design various bituminous mixes based on a knowledge of the characteristics of bitumin and the function it is to perform 3. Test the various mixes of both concrete and bitumen, as individuals and in groups to confirm the performance of the specified design 4. Apply this understanding of the various materials within a supervisory position in industry 	

Module Content & Assessment

Indicative Content
Aggregates The uses of aggregates in construction, specification and testing.
Bituminous production and construction Bitumen processing, specification and testing
Surface dressing design Carry out design and prepare specification for the resurfacing of road carriageways.
Concrete production and construction Concrete manufacturing, Storage of constituents. Batching and mixing. Transporting, placing and pumping of concrete. Formwork and reinforcement. Compaction of concrete. Concreting in cold weather. Curing of concrete. Making good and tooling of concrete. Joints in concrete. Introduction to prestressed concrete construction.
Concrete Mix Design Carry out design, prepare specification and testing for varying concrete types for varying purposes.
Concrete Investigation Strength Tests: non-destructive/destructive and Durability Tests
Steel reinforced concrete Relationship between concrete and steel reinforcement. Design, preparation and testing of Reinforced Concrete beams
Structural Steel Fabrication, installation/assembly, specification and testing
Newer Materials, technologies and applications New Cement Types, Reinforcing, Fibres, GRP, Shotcrete, Self-Compacting Concrete, Lightweight Concrete, High Performance Concrete, Controlled Permeability Formwork

Assessment Breakdown	%
Course Work	30.00%
End of Module Formal Examination	70.00%

Full Time

Course Work							
Assessment Type	Assessment Description	Outcome addressed	% of total	Marks Out Of	Pass Marks	Assessment Date	Duration
Practical/Skills Evaluation	4no. practical laboratory-based exercises and experiments designed to implement and reinforce the theory presented in lectures including the health and safety aspects associated with the testing of materials. This will also involve the preparation of laboratory reports associated with the directed laboratory exercises.	1,2,3	30.00	0	0	n/a	0

No Project

No Practical

End of Module Formal Examination							
Assessment Type	Assessment Description	Outcome addressed	% of total	Marks Out Of	Pass Marks	Assessment Date	Duration
Formal Exam	The final exam will be a 2-hour written test. Students will normally have to answer 3 out of 5 questions.	1,2,4	70.00	0	0	End-of-Semester	0

Reassessment Requirement**A repeat examination**

Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

Reassessment Description

Students shall also be offered appropriate alternative assessments in place of recoverable elements of coursework for completion prior to the summer break / during the subsequent semester / for consideration prior to the repeat examination board meeting. Elements of coursework which the programme board have agreed are non-recoverable are clearly communicated to students at the start of each semester.

DKIT reserves the right to alter the nature and timings of assessment

Module Workload & Resources

Workload: Full Time

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	3.00	Every Week	3.00
Practical	No Description	1.00	Every Week	1.00
Directed Reading	No Description	2.00	Every Week	2.00
Independent Study	No Description	2.00	Every Week	2.00
Total Weekly Learner Workload				8.00
Total Weekly Contact Hours				4.00

This course has no Part Time workload.

Resources

Recommended Book Resources

Teychenne, Franklin, Erntroy and Marsh 1997, *Design of Normal Concrete Mixes*, 2nd Ed., Building Research Establishment [ISBN: 1860811728]

Jackson and Dhir 1996, *Civil Engineering Materials*, 5th Ed., Macmillan [ISBN: 033363683X]

Illston and Domone 2001, *Construction Materials*, 3rd Ed., Spon [ISBN: 0419258604]

Derucher et al 1998, *Materials for Civil and Highway Engineers*, 1st Ed., Prentice Hall [ISBN: 0139050434]

This module does not have any article/paper resources

This module does not have any other resources

Module Delivered in

Programme Code	Programme	Semester	Delivery
DK_ECENG_8	Bachelor of Engineering (Honours) in Civil Engineering	3	Mandatory
DK_ECIVL_7	Bachelor of Engineering in Civil Engineering	3	Mandatory