

<b>Full Title:</b>	Structural Mechanics 2
<b>Language of Instruction:</b>	English
<b>Module Code:</b>	CNST I7009
<b>Credits:</b>	5
<b>Valid From:</b>	Semester 1 - 2014/15 ( September 2014 )
<b>Module Delivered in</b>	<a href="#">1 programme(s)</a>
<b>Module Description:</b>	Structural Mechanics 2 aims to introduce the student to elementary structural mechanics. This includes calculating deflections in beams, force analysis of plane frames, stress analysis of simple beams and buckling of struts.
<b>Learning Outcomes:</b>	
<i>On successful completion of this module the learner should be able to</i>	
<ol style="list-style-type: none"> <li>1. Demonstrate knowledge of stresses and forces in beams and frames, when subject to actions.</li> <li>2. Analyse stresses in simple beams and forces in simple structures.</li> <li>3. Conduct basic experiments on simple structures, interpret and appraise experimentally derived data.</li> <li>4. Communicate clearly experimental results in written format.</li> </ol>	

**Module Content & Assessment**

**Indicative Content**

**Deflections**

Deflection formulae – standard cases. Analysis of propped cantilever and fixed ended beam.

**The three pinned portal frame.**

Reactions, bending moments and shear force. Bending moment diagram.

**Analysis of Plane Frames**

Determination of degree of redundancy. Force analysis of statically determinate pin-jointed plane frames

**Combined Direct and Bending Stresses in Beams**

Beams of two materials – composite beams. Eccentrically applied load on a section. Shearing stresses in beams. Distribution of stresses in beam sections

**Buckling of Struts**

Euler formula and Rankine formula. Effective lengths and slenderness ratio. Load capacity of real struts

**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
Class Test	5 Class tests	1,2	15.00	0	0	n/a	0
Practical/Skills Evaluation	Deflection of beams	3,4	5.00	0	0	Week 7	0
Practical/Skills Evaluation	Buckling of struts	3,4	5.00	0	0	Week 9	0
Practical/Skills Evaluation	Stresses in beams	3,4	5.00	0	0	Week 11	0

No Project

No Practical

No End of Module Formal Examination

**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.

**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	3 hours per week	3.00	Every Week	3.00
Practical	A series of related laboratory experiments.	2.00	Every Second Week	1.00
Independent Study	Revising notes and attempting selected tutorial exercises.	3.00	Every Week	3.00
Directed Reading	No Description	2.00	Every Week	2.00
Total Weekly Learner Workload				9.00
Total Weekly Contact Hours				4.00

This course has no Part Time workload.

**Resources**

*Recommended Book Resources*

R. Whitlow 1996, *MATERIALS AND STRUCTURES*, 2 nd Ed., 6,7,10, Longman England [ISBN: 0582066980]

H. Al Nageim, F. Durka, W. Morgan and D. Williams 2010, *Structural Mechanics*, 7 th Ed., All, Prentice Hall London [ISBN: 0132239647]

Williams, M.S. & Todd, J.D. 2000, *Structures: Theory and Analysis*, 1st Ed Ed., Palgrave Macmillan [ISBN: 0333677609]

*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_ECIVL_7	<a href="#">Bachelor of Engineering in Civil Engineering</a>	3	Mandatory