

APPROVED**MATH6062: Mathematics for Architecture****Module Details**

Module Code:	MATH6062
Title:	Mathematics for Architecture APPROVED
Long Title:	Mathematics for Architecture
NFQ Level:	Fundamental
Valid From:	Semester 1 - 2019/20 (September 2019)
Duration:	1 Semester
Credits:	5
Field of Study:	4610 - Mathematics
Module Delivered in:	4 programme(s)
Module Description:	This module provides the learner with the knowledge, skills and competence to solve practical mathematical problems encountered in Architecture

Learning Outcomes

On successful completion of this module the learner will be able to:

#	Learning Outcome Description
LO1	Perform arithmetical calculations relevant to Architecture.
LO2	Manipulate context based algebraic expressions and equations, transpose formulae, and employ function notation effectively.
LO3	Use trigonometry to solve practical problems in Architecture.
LO4	Use mensuration to solve practical problems in Architecture.
LO5	Examine geometric constructions employing the golden ratio

Dependencies**Module Recommendations**

Not applicable

Incompatible Modules

Not applicable

Co-requisite Modules

No Co-requisite modules listed

Requirements

Not applicable

Indicative Content**The Fundamentals of Mathematics**

Manipulating numbers. Order of operations (BODMAS rule). The arithmetic of fractions. Decimal notation and calculations. Ratio and proportion with specific examples relevant to students of architecture and design. Scaled drawings. Percentages. Scientific notation and significant figures. Approximation, error estimation, absolute and relative percentage error.

Algebra

Formulation and solution of linear, quadratic and linear simultaneous equations. Transposition and evaluation of formulae.

Units and Conversions

The SI system of units, prefixes, usage. Imperial and metric conversions.

Trigonometry

Types of angles and triangles. Pythagoras Theorem. Trigonometric ratios, sine rule and cosine rule. Angles of elevation and depression.

Mensuration

Practical problems on perimeter and area: rectangle, triangle, parallelogram, trapezium, circle (inc. arcs and sectors). Simpson's rule and Trapezoidal rule. Volume and surface area: cylinder, sphere, hemisphere, cuboid, cone, frustum of cone. Heat loss estimation.

Geometry

Geometry of shapes, trusses and architectural examples employing the golden ratio.

Module Content & Assessment

Assessment Breakdown	%
Coursework	100.00%

Assessments

Coursework			
Assessment Type	Short Answer Questions	% of Total Mark	30
Timing	Week 4	Learning Outcomes	1
Assessment Description In class test - Fundamentals of Mathematics,			
Assessment Type	Short Answer Questions	% of Total Mark	35
Timing	Week 8	Learning Outcomes	2
Assessment Description In class test - Algebra, units and conversions			
Assessment Type	Short Answer Questions	% of Total Mark	35
Timing	Week 12	Learning Outcomes	3,4,5
Assessment Description In class test - Trigonometry, mensuration, golden ratio constructions			
No End of Module Formal Examination			
Reassessment Requirement			
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.			

Module Workload

Workload: Full Time					
Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Lecture	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Review of lecture material, completion of homework sheets, preparation for tutorial	Every Week	3.00	3
Tutorial	Contact	Active problem solving, completion of tutorial sheets	Every Week	1.00	1
Total Hours					7.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					4.00

Workload: Part Time					
Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Lecture	Every Week	2.50	2.5
Lecturer Supervised Learning (Non-contact)	Non Contact	Preparation for tutorial (tutorial and homework sheets)	Every Second Week	0.50	1
Independent & Directed Learning (Non-contact)	Non Contact	Review of lecture material, completion of homework sheets, preparation for tutorial	Every Week	3.50	3.5
Tutorial	Contact	Active problem solving, completion of tutorial sheets	Every Second Week	0.50	1
Total Hours					8.00
Total Weekly Learner Workload					7.00
Total Weekly Contact Hours					3.00

Module Resources

Recommended Book Resources	
John Bird. (2017), Basic Engineering Mathematics, 7th. Routledge, [ISBN: 1138673706]. Surinder Virdi, Roy Baker, Narinder Kaur Virdi. (2014), Construction Mathematics, 2nd. Routledge, England, [ISBN: 9780415810784].	
Supplementary Book Resources	
K.A. Stroud, with D.J. Booth. (2009), Foundation Mathematics, Palgrave Macmillan, England, [ISBN: 9780230579071]. K.A. Stroud. (2009), Essential Mathematics for Science and Technology: A Self-Learning Guide, 1st. Industrial Press, [ISBN: 0831133910]. J. O. Bird, A. J. C. May. (1994), Technician mathematics 3, Longman Scientific & Technical, Harlow, [ISBN: 9780582234246].	
This module does not have any article/paper resources	
Other Resources	
Website, MathCentre, http://www.mathcentre.co.uk Website, http://www.mathtutor.ac.uk/. MathTutor. Website, CIT. CIT Maths Online - accessible via CIT's VLE, http://www.mycit.ie	

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_CARCT_8	Bachelor of Science (Honours) in Architectural Technology	-1	Mandatory
CR_DINAR_8	Bachelor of Science (Honours) in Interior Architecture	-1	Mandatory
CR_TARCH_7	Bachelor of Science in Architectural Technology	-1	Mandatory
CR_DIARC_7	Bachelor of Science in Interior Architecture	-1	Mandatory