

H6MBF: Mathematics for Business and Finance

Module Code:	H6MBF
Long Title	Mathematics for Business and Finance APPROVED
Title	Mathematics for Business and Finance
Module Level:	LEVEL 6
EQF Level:	5
EHEA Level:	Short Cycle
Credits:	5
Module Coordinator:	Gaia Barone
Module Author:	JONATHAN LAMBERT
Departments:	School of Business
Specifications of the qualifications and experience required of staff	
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Manipulate expressions and equations and apply the laws of exponents and logarithms
LO2	Calculate and analyse the value of an asset in the context of interest
LO3	Calculate and compute the future value, present value, time taken, and or interest rate required for a funds parameter to assume a particular state
LO4	Make appropriate decisions with respect to the most appropriate investment strategy as presented through a number of scenarios
LO5	Calculate the values of Mortgages, Sinking Funds, Annuities
LO6	Use and develop spreadsheet-based solutions to financial problems
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	Programme entry requirements

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Module Content & Assessment			
Indicative Content			
Algebra and Calculus Functions (Exponential functions; Logarithm functions); Limits (Tangent line); Derivatives (Overview; Interpretation; Computation); Sequences and Series (Special sequences and series).			
Basic Financial Operations Financial variables (Future value, present value, interest and discount; Accumulation factor, discount factor, interest rates and discount rates; Relationships between financial variables); Actuarial methods for calculating interests and discounts (Simple interest; Compound interest); Interest rates (Effective and nominal interest rates; Instantaneous interest rates).			
Complex Financial Operations Fundamental notions on annuities (Annuities; Present value and future value; Classifications); Annuities with constant payments (Present value and future value; Payments and number of payments; Interest rate).			
Amortizing a Loan Amortization (Introducing Amortization; Amortization schedules; Amortization schedule with predetermined payments or principal quotas); Various amortization methods (French amortization method; Italian amortization method; Sinking fund and American amortization method; Other amortization methods); Loan value (Outstanding loan balance, Loan value, bare ownership and usufruct).			
Mathematical Methods for Investments Choices Projects' algebra (Projects' analytical representation; Projects' algebra); Investments' criteria (Definition and properties; Classification); NPV and IRR (NPV; IRR).			
Term Structure of Interest Rates and Arbitrages Spot and forward rates (Term structure of interest rates; Spot and forward contracts; Arbitrages; Non-arbitrage condition; Forward rates); Zero rates (Bootstrap method).			
Assessment Breakdown			%
Coursework			40.00%
End of Module Assessment			60.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Continuous Assessment	% of total:	40
Assessment Date:	n/a	Outcome addressed:	1,2,3
Non-Marked:	No		
Assessment Description: Candidates are required to complete one in-class MCQ, which is a mix of theoretical and problem-based question			
End of Module Assessment			
Assessment Type:	Terminal Exam	% of total:	60
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4,5,6
Non-Marked:	No		
Assessment Description: Final Examination, which will consist of an Excel-based exam.			
No Workplace Assessment			
Reassessment Requirement			
Repeat examination <i>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.</i>			
Reassessment Description Candidates will attempt the repeat assessment for the module, if they do not successfully pass the module. Learners are required to attempt all assessments attaching to a module. For those modules where all learning outcomes are assessable with a final examination, the student does not have to re-sit failed individual CA components.			

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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom and demonstrations	2	Every Week	2.00
Lecturer Supervised Learning	Mentoring and small-group tutoring	1	Every Week	1.00
Directed Learning	Directed e-learning	3	Every Week	3.00
Independent Learning	Independent learning	8	Every Week	8.00
Total Weekly Contact Hours				6.00

Module Resources	
<i>Recommended Book Resources</i>	
<p>Pamela Peterson Drake, Frank J. Fabozzi. Foundations and Applications of the Time Value of Money, [ISBN: 978-0-470-52602-6].</p> <p>Erio Castagnoli, Margherita Cigola, Lorenzo Peccati. Financial Calculus. With Applications, [ISBN: 978-8823821743].</p>	
<i>Supplementary Book Resources</i>	
<p>Roland Minton, Robert T Smith. Calculus, [ISBN: 978-0073383118].</p>	
<i>This module does not have any article/paper resources</i>	
<i>This module does not have any other resources</i>	
Discussion Note:	