

H9QAF: Quantitative Analysis for Finance

Module Code:	H9QAF
Long Title	Quantitative Analysis for Finance APPROVED
Title	Quantitative Analysis for Finance
Module Level:	LEVEL 9
EQF Level:	7
EHEA Level:	Second Cycle
Credits:	5
Module Coordinator:	CORINA SHEERIN
Module Author:	CORINA SHEERIN
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	Synthesise data and analyse business problems under conditions of uncertainty, formulate null and alternative hypotheses and exercise critical judgement and discrimination in the resolution of complex problematic situations using hypothesis testing.
LO2	Formulate ideas in an abstract manner using analysis of variance and regression analysis, interpret regression output and critically evaluate the relevance and importance of underlying assumptions in the modelling process.
LO3	Critically evaluate the use of the chi square distribution within the context of financial data, design and conduct tests of hypothesis comparing an observed set of frequencies to an expected distribution and interpret and formulate conclusions based on results.
LO4	Disseminate the components of a time series, select and apply appropriate trend models with necessary adjustments, distinguish between the additive and multiplicative models and evaluate contemporary literature concerning the use of time-series analysis in finance and investment.
LO5	Select from a range of technical analysis indicators and articulate, justify and defend investment recommendations based on chart patterns observed.
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	

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Module Content & Assessment			
Indicative Content			
Hypothesis Testing (Week 1-2) • Hypothesis Testing: An Introduction • Hypothesis Tests: The Mean (Single Mean, Differences between Mean, Mean Differences) • Hypothesis Tests: Variance (Single Variance, Equality (Inequality) of Two Variances)			
Analysis of Variance (Week 3-4) • The F Distribution • Comparing Population Variances • Analysis of Variance (ANOVA) Assumptions • ANOVA Tests			
Multiple Regression and Issues in Regression Analysis (Week 5 -7) • Assumptions underlying Multiple Regression • Multiple Regression Analysis • Multiple Standard Error of Estimates • Evaluating the Regression Equation • Issues in Regression Analysis: o Multicollinearity o Heteroskedasticity o Serial Correlation			
Non Parametric Methods: Chi Squared Distribution (Week 8-10) • Goodness of Fit Tests: Equal Expected Frequencies • Goodness of Fit tests: Unequal Expected Frequencies • Limitations of Chi Squared Distribution • Contingency Table Analysis			
Time Series Analysis (Week 11-12) • Components of a Time Series Model • Linear and Non Linear Trend Models • Moving Average Models • Seasonality in Time Series models			
Technical Analysis (Week 13) • Principles and Assumptions • Technical and Fundamental Analysis • Technical Analysis Tools			
Assessment Breakdown			%
Coursework			40.00%
End of Module Assessment			60.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Project	% of total:	40
Assessment Date:	n/a	Outcome addressed:	1,2
Non-Marked:	No		
Assessment Description: The Quantitative Analysis continuous assessment may take the form of a large scale data based project; a technical report; a detailed problem set based assignment which may contain case study data or an in class test. Presentations may also be used in conjunction with any of the afore mentioned assessment methods. The exact nature of the assessment will be decided annually by the programme team bearing in mind contemporary financial issues. The continuous assessment element of this module will assess both theoretical and analytical skills as undertaken on the programme and candidates must demonstrate skills of analysis and interpretation of data regardless of the form of assessment.			
Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4,5
Non-Marked:	Yes		
Assessment Description: Formative assessment will be provided to students through the use of on-line quizzes and short answer questions. In addition in class problems and discussions will provide an opportunity for formative learning and student feedback to be provided. Provision of individual feedback will be provided individually outside of lecture time or on line through Moodle.			
End of Module Assessment			
Assessment Type:	Terminal Exam	% of total:	60
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4,5
Non-Marked:	No		
Assessment Description: The examination will be a minimum of two hours in duration and may include a mix of: short or long problem based questions, vignettes, essay based questions and case study based questions. All questions will be marked according to clarity, structure, contemporary examples (that illustrate points made), reference to materials covered, theories and research in the field. Reference to class material and evidence of outside reading is essential.			
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>			

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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
Practical	No Description	3.5	Every Week	3.50
Assignment	No Description	2.5	Once per semester	0.21
Independent Learning	No Description	4.5	Once per semester	0.38
Total Weekly Contact Hours				3.50
Workload: Part Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Practical	No Description	3.5	Every Week	3.50
Independent Learning Time	No Description	4.5	Once per semester	0.38
Assignment	No Description	2.5	Once per semester	0.21
Total Weekly Contact Hours				3.50

Module Resources	
<i>Recommended Book Resources</i>	
De Fusco R.A., Pinto J.E., Runkle D.E., and McLeavey D.W. (2007), Quantitative Investment Analysis, Wiley (CFA Institute).	
<i>Supplementary Book Resources</i>	
Kirkpatrick, C.D.. (2012), Time the Markets: Using Technical Analysis to Interpret Economic Data., 2nd. Pearson Education. Lind D.A., Marchal W.G., and Wathen S.A. (2015), Statistical Techniques in Business and Economics, 16th. McGraw Hill. Davison, M.. (2014), Quantitative Finance: A Simulation Based Introduction Using Excel, Chapman and Hall/CRC.. Elton, R.J., Gruber, M.J., Brown,S., Goetzmann,W.N.. (2014), Modern Portfolio Theory and Investment Analysis, 9th. Wiley Publications. Koop, G.. (2013), Analysis of Economic Data, Wiley Publications.. Jones, C.P.. (2012), Investment Analysis and Management, 12th. Wiley Publications. Jacques, I.. (2013), Mathematics for Economics and Business, 7th. FT Prentice Hall.	
<i>This module does not have any article/paper resources</i>	
<i>Other Resources</i>	
[Website], http://epp.eurostat.ec.europa.eu/. [Website], http://www.ecb.int/home/html/index.en.ht ml. [Website], www.cso.ie. [Website], www.bloomberg.com. [Website], www.reuters.com. [Journal], Journal of Finance. [Journal], Journal of Quantitative Finance. [Journal], European Journal of Finance. [Journal], Journal of Economics and Finance. [Journal], Journal of Applied Quantitative Methods.	
Discussion Note:	