University of Management and Technology

Dr Hasan Murad School of Management (HSM)

Course Outline

Course code: FN-733_____   Course title: Advanced Financial Modeling

Program	MS- Finance
Credit Hours	3 CH
Duration	15 sessions of 3 hours each
Prerequisites	Introductory level finance courses
Resource Person	
Counseling Timing	

Chairman/Director Programme signature......................................

Dean's signature............................... Date..

Learning Objective:

In today's information age, managers increasingly rely on quantitative modelsand big data to make financial decisions that have a profound impact on theperformance of their organizations. Often business analysts produce thequantitative models that top management use to support their decision making,but top management must also understand the strengths and weaknesses of themodels if they are to use them effectively to support their decisions. Theobjective of this course is to equip you with the frameworks, tools, andmethodologies necessary to build and/or be an educated user of quantitativemodels for financial decision making. The course is suitable for students seekinga career in finance, but also for students with broader interests who wish tostrengthen their general modeling skills, and it does not require any quantitativebackground other than what is covered in the core courses. The modeling tools will be illustrated by applying themto a variety of real-world cases.

Business decisions and most routine financial roles are increasingly made based on a financialmodel built in Excel. In today's ever-changing business environment being able to accuratelymodel and forecast the volatile economic inputs is a critical skill for business professionals, thecapability to write simple spreadsheets is just not enough. You have to be able to incorporateall the "what if" scenarios and stress any proposal to its limits. Financial Modeling with Excel issuch a workshop where knowledge of Finance meets with Technology for better understandingof the Financial World.

 It's a skill set focusing course, bridging the gap between a research focus master program and the needs of the market by practically implementing the financial theory.

By the end of the course, students should be able to

1. Discuss uses and applications for financial models, including uses as decision making tools.
2. Understand uses for financial analysis and sensitivity analysis.
3. Have develop a deeper understanding of Excel and STATA, its functions, tools and add-ons
4. Gained guidelines on how to format, set-up, label and structure financial models
5. Developed a deeper understanding of selected financial techniques, and the skills required to construct practical models to estimate appropriate out-comes

Learning Methodology:

A famous Chinese proverb reads "I hear, I forget. I see, I remember. I do, Ilearn". The structure of the course "Financial Modeling" tries to capture the wisdom of this proverb. A typical session consists of threesteps. First, the instructor lectures about academic concepts from the fields ofManagement Science and Finance (I hear). Second, the instructor applies theseconcepts to a particular business situation (I see). Third, the studentsthemselves apply the concepts to a real-world business case with the help of theinstructor (I do).

Given the sheer number of models that need to be constructed on an individual basis, this course will be run more as a seminar and independent study rather than a pure "lecture/discussion" course. The textbooks do a great job on presenting how to construct each model. The lectures will be staged throughout the semester to either expand on your readings or provide insight into various Excel and Rtopics that are not covered in the textbooks. Students will be assigned a number of models to construct from the textbooks on an individualized basis. You will also be required to work on anindividual project. The class will wrap up with each team presenting a demo of their

model along with commentary regarding the business case and the technical approach taken in the design of the model.

A series of academic papers (published in impact factor journals) will be provided to you. You will need to go over them as we progress through the course and present the model, data and results of any two papers in class.

Required Software
1. Microsoft Excel
2. R/R-studio

Grade Evaluation Criteria

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

Course Breakup	
Position Paper	10%
Group Presentation	10%
In class Activity	10%
Paper Replication/summary	10%
Assignments	10%
Project	20%
Term Paper	30%
	100%

Recommended Text Books:

A comprehensive Course Pack with selection of readings and academic papers from reputed texts and journals on the subject will be provided. Financial statements of companies from different sectors will be consulted.

E-Resources:http://moodle.umt.edu.pk

Reference Books:

The materials in the course pack and portal should be sufficient to take thecourse and hence there is no required textbook for the course. Severaltextbooks, however, can be used to complement the materials in the course packand in the Portal:
1. "Spreadsheet Modeling and Applications", by Albright and Winston, Thomson/Duxbury Press 2005.
2. "Principles of Corporate Finance", by Brealey, Myers, and Allen, 10th ed., 2010.
3. "Options, Futures and Other Derivatives", by John C. Hull, Sixth Edition, Prentice Hall 2006.
4. "VBA for modelers", by Christian Albright, Second Edition, Palisade 2006.
5. Excel Modeling in Corporate Finance 2nd Ed., Craig W. Holden, Prentice-Hall 2004 Microsoft Office Excel 2010: A Lesson Approach, Complete, Kathleen Stewart, McGraw-Hill 2010
6. John Walkenbach's Favorite Excel 2010 Tips & Tricks
7. Excel 2010 Formulas, John Walkenbach
8. Excel 2010 Bible, John Walkenbach

9. Excel 2007 Charts, John Walkenbach
10. Principles of Finance with Excel, Simon Benninga
11. John Simon Benninga, Financial Modelling, 3rd edition, the MIT Press.

One of the best sites and authors of Excel books can be found at http://www.spreadsheetpage.com

Calendar of Course contents to be covered during semester

Session	Topic	Exercises and papers
1	Why Model Basics of Excel	
2	Measure of Central Tendency and Variance Return Calculation Continuous vs., Discrete Returns Standardized Returns	Derivation of Formula for Standard Deviation Derivation of Properties of Continuous Returns
3	Ratio Analysis and Financial Forecasting	Derivation of Ratios for future, Financial dashboards
4	Time Value of Money	Derivation of TVM formulas
5	Capital Budgeting Techniques	Variations in Practice
6	Regression and CAPM, FF3, Multivariate Regression and Arbitrage Pricing Theory	
7	Event Studies	
8	Introduction to Financial Engineering-Stock and Bond Valuation, using the discounting approach	Making and pricing new securities
9	Valuation through Comparables, EVA and other value added approaches	
10	Altman Z Score and Logistic Model	
11	Portfolio, Efficient Frontier, Optimal Portfolio	Derivation in 2 and 3 security portfolio
12	Sensitivity and Duration and Convexity Modeling	Derivation of Duration/ Convexity formula
13	Introduction to Risk and its approaches	Brief Introduction of Time series Analysis
14	Volatility Modeling, ARCH, GARCH	
15	Value at Risk Calculations, Historical, Monte Carlo Simulation, and GARCH forecasting	