Subject Description Form

Subject Code	AMA540
Subject Title	Business Forecasting
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	**Pre-requisite:** AMA528 Probability and Stochastic Models
Objectives	Enable students to understand the modeling and forecasting of time series data from business, economics or finance. Computer packages such as Minitab, R, or SPSS will be extensively used.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) Analyze time series data with business, economics or finance background (b) Identify an appropriate SARIMA model (c) Perform parameter estimation and model checking for SARIMA models (d) Obtain forecasts based on SARIMA models (e) Model economic or financial data with ARCH and GARCH models
Subject Synopsis/ Indicative Syllabus	Basic concepts: Stationary time series, autocorrelation function and partial autocorrelation function. ARIMA and Seasonal ARIMA (SARIMA) models : Autoregressive model, moving average model, autoregressive integrated moving average model; model identification, estimation, diagnostic checking and model selection criteria; forecasting. Seasonal time series and its modeling. Applications. Time series regression and conditional heteroscedastic time series modeling: Time series regression and Durbin Watson statistic; ARCH and GARCH models and their AR and ARMA representation, estimation and forecast of volatility. Applications.
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorials, plus some case studies. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of statistical techniques and how the techniques can be applied to solving practical problems in business and economics.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
1. Assignments	10%	✓	✓	✓	✓	
2. Tests	30%	✓	✓	✓	✓	
3. Examination	60%	✓	✓	✓	✓	✓
Total	100 %					

Student Study Effort Required

Class contact:	
▪ Lecture	26 Hrs.
▪ tutorial	13 Hrs.
Other student study effort:	
▪ Assignment/mini project	28 Hrs.
▪ Laboratory	14 Hrs.
▪ Self-study	56 Hrs.
Total student study effort	137 Hrs.

Reading List and References

Wei, W.W.S.	Time series analysis Univariate and Multivariate Methods, 2nd edition	Pearson Education 2006
Cryer, J.D. and Chan, K.S.	Time Series Analysis with Applications in R, 2nd edition	Springer 2008
Hanke, J.E., and Wichern D.W.	Business forecasting, 9th edition	Pearson/Prentice Hall, 2009
Montgomery, D.C., Jennings, C.L., and Kulahci, M.	Introduction to time series analysis and forecasting	John Wiley, 2008
Reza Hosmand, A.	Business Forecasting A Practical Approach	Routledge Taylor & Francis Group, 2010
Ruey S. Tsay	An Introduction to Analysis of Financial Data with R	John Wiley, 2013