ORBS 7010   Operational Research I   (3,3,0) (E)
This course introduces the fundamental theory, techniques and algorithms for linear programming, nonlinear programming and statistical computation problems.

**ORBS 7020   Techniques of Production   (2,2,0) (E)
                  Operations Management**
This course introduces students systematically to the range of activities involved in production and operations management, mainly adopting quantitative approaches.

**ORBS 7030   Statistical Software in Business   (3,3,0) (E)
                  and Management**
This course introduces elementary statistical concepts and methods and how to use SPSS, a friendly statistical software, as a computational aid to carry out the statistical computation.

ORBS 7040   Computer Tools for Simulation   (3,3,0) (E)
This course introduces how to use computers to analyse real-life managerial problems, understand the theoretical basis of discrete-event simulation models and communicate technical results effectively to non-specialist managers.

ORBS 7070   Business Statistics and Modelling   (3,3,0) (E)
This course introduces statistical methods for analysing categorical data arisen from qualitative response variables which cannot be handled by methods dealing with quantitative response, such as regression and ANOVA.

ORBS 7080   Operational Research II   (3,3,0) (E)
This course introduces the basic techniques and algorithms for dynamic programming, inventory control and queuing theory.

ORBS 7090   Performance Management   (2,2,0) (E)
This courses introduces students systematically to the range of activities in performance evaluation, mainly adopting quantitative approaches; and enables students to gain an understanding of the suitable quantitative approaches used in performance evaluations (and related areas).

**ORBS 7100   Managing Complexity: The Systems   (2,2,0)
                  Approach**
This course introduces a range of soft OR/systems methods in a practical and yet critical way.

ORBS 7110   Quantitative Models for Marketing (2,2,0) (E)
This course aims to study market response models that capture the factors that drive a market and market segmentation models for conducting segmentation studies.

**ORBS 7120   Business Intelligence and Decision   (2,2,0)
                  Support**
The aims of this course are to study the concepts and tools of business intelligence, to explore the process, contents and context of managerial decision making and to look at how business intelligence can enhance a company's competitive advantage and improve its top management decision-support effectiveness.

ORBS 7130   Survey Sampling   (2,2,0)
This course introduces the overall planning of the survey operation and design and selection of samples and the design of questionnaires; the various survey sampling methods and the corresponding analyses of data, especially the estimation methods of population mean and proportion.

ORBS 7140   Actuarial Statistics   (2,2,0) (E)
This course introduces the mathematics of risk and insurance, life contingencies as applied to models including expenses, non-forfeiture benefits, dividends, and valuation theory for pension plans.

ORBS 7150   Experimental Design   (2,2,0)
This course introduces various kinds of experimental designs involving factorial and uniform designs as well as design for computer experiments.

ORBS 7160   Network and Project Management   (2,2,0) (E)
This course introduces the fundamental idea, techniques and algorithms for network, transportation, and assignment models, as well as project management.

**ORBS 7180   Heuristic and Structured Problems   (2,2,0) (E)
                  in Operational Research**
This course introduces model building and solution techniques for practical problems in mathematical programming, and the methods in the design and analysis of algorithms for solution to large size practical real-life problems.

**ORBS 7190   Data Mining and Knowledge   (2,2,0) (E)
                  Discovery**
This course introduces the concept of data mining and knowledge discovery, and data mining techniques (included advance statistical and machine learning technique) for solving problems such as data cleaning, clustering, classification, relation detection, and forecasting.

ORBS 7200   Derivatives   (2,2,0) (E)
This course introduces computational methods for problems of finance, including mainly the computation of market indicators and option price.

ORBS 7210   Work-base Learning   (2,0,2) (E)
This course gives an opportunity for students to apply the skills and knowledge from the MSc programme to local (Hong Kong) companies/industries.

ORBS 7220   Risk and Portfolio Management   (2,2,0) (E)
This course introduces the fundamental concepts of financial derivatives and portfolio risk measurement and management. Students will learn why both firms and individual investors should learn how to measure and manage risk.

ORBS 7231-2 Dissertation I & II   (6,0,9) (E)
This is an individual dissertation which usually relates to the operational research and business statistics, and requires knowledge and skill acquired in the course. A thesis and an oral presentation are required upon completion of the project.

ORBS 7240   Forecasting and Demand Management (2,2,0)
To learn the theory of business forecasting, apply forecasting methods in practice using computer tools and real-world data, understand how firms should set and update pricing and product availability decisions across their various selling channels in order to maximize profitability.

ORBS 7250   Applied Multivariate Analysis   (3,3,0) (E)
This course introduces classical multivariate analysis and techniques which are useful for analysing both designed experiments and observational studies.

ORBS 7260   Applied Time Series   (3,3,0) (E)
This course introduces sophisticated statistical techniques and models for analysing time series data.

ORBS 7270   Financial Calculus   (2,2,0)
This course introduces derivative pricing. Students will learn some well-known mathematical pricing models of financial instruments under no arbitrary principle. We first overview some fundamental probability, statistical knowledge and skills required for mathematical finance. Then, we shall introduce an important concept in financial pricing models, Martingale and Risk neutrality. In the incomplete market, Martingale probability measure provides an important method in obtaining a fair instrument price under no arbitrary principle. Then, we shall