

# Management Science Program

## Course Descriptions

### Course Number:

QMIS-091

### Title:

pre-calculus

### Contents:

This course provides an introductory level of algebra and pre-calculus. Topics include basic algebra, equations, inequalities, solving linear, quadratic equation, functions, graphs, exponential and logarithmic functions, with application to business.

### References:

**Introductory Mathematical Analysis for Business, Economics, and Life and Social Sciences,**  
*Haeussler, E. F. and Paul, R. S,* 10<sup>th</sup> Ed., Prentice Hall

### Prerequisites:

None

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### Course Number:

QMIS-110

### Title:

Business Math

### Contents:

The course covers basic unvaried calculus with applications in business. Topics include an introduction to linear algebra, limits, differentiation with application and integration.

### References:

**Introductory Mathematical Analysis for Business, Economics, and Life and Social Sciences,**  
*Haeussler, E. F. and Paul, R. S,* 13<sup>th</sup> Ed., Prentice Hall

### Prerequisites:

QMIS 091

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### Course Number:

QMIS-120

### Title:

Business Statistics I

### Contents:

The course provides an introduction to statistical concepts and techniques with application in business. Topics include graphical and tabular presentation of data, introduction to MINITAB, measure of center tendency and dispersion, introduction to probability, random variables, discrete and continuous distributions and sampling distribution.

### References:

**Statistics for Managers,** *Levine, D.M., Stephan, D.F., Krehbiel, T.C., and Bereuson, M.L - Pearson.*

### Prerequisites:

QMIS 110

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### Course Number:

QMIS-205

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**Title:**

Introduction to Management Science

**Contents:**

Introduces the student to the quantitative business analysis using several mathematical models, such as linear programming and its applications to business problems, special models such as transportation, transshipment, assignment and project scheduling using CPM/PERT techniques.

**References:**

**An Introduction to Management Science: Quantitative Approaches to Decision Making,** Anderson, S. and Williams, S. 13<sup>th</sup> ed. 2003, South-Western Cengage learning.

**Prerequisites:**

QMIS 110

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**Course Number:**

QMIS-210

**Title:**

Operations Management

**Contents:**

Provides the knowledge and skills required to design, operate and control the production systems in services and manufacturing organizations. Topics include product selection & design, process selection, capacity planning, location decisions and facility layout, demand forecasting, inventory management, and an introduction to quality & productivity management.

**References:**

**Operations Management,** Stevenson, W. J 10<sup>th</sup> ed. 2002, McGraw-Hill

**Prerequisites:**

QMIS 205

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**Course Number:**

QMIS-220

**Title:**

Business Statistics II

**Contents:**

Provides a comprehensive coverage for inferential statistics that are needed for analyzing business data. Topics include confidence intervals, hypothesis testing, correlation, simple and multiple linear regression, introduction to time series and index numbers.

**References:**

**Statistics for Managers,** Levine, D.M., Stephan, D.F., Krehbiel, T.C., and Berenson, M.L - Pearson.

**Prerequisites:**

QMIS 120

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**Course Number:**

QMIS-310

**Title:**

Operations & Service Management

**Contents:**

Offers an advanced understanding of the operations management in service and manufacturing organizations. Topics include operations strategy, performance measurement and improvement, demand forecasting, capacity planning, aggregate production planning, process scheduling, and operations technology.

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**References:**

1- **Operations Management**, *Stevenson, W. J.* 2002, McGraw-Hill

2- **Service Management: Operations, Strategy, IT**, 6<sup>th</sup> ed , James & Mona Fitzsimmons.

**Prerequisites:**

QMIS 210

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**Course Number:**

QMIS-316

**Title:**

Supply-Chain Management

**Contents:**

An integrated approach of supply-chain, material requirement planning, just-in-time systems, material flow systems, purchasing and suppliers strategy, warehousing management, transportation and distribution systems, inventory planning and control, and e-business in supply chain management.

**References:**

**Supply Chain Management: Sterategy, Planning, and Operation**, Sunil Chopra, Peter Meindle, , 4<sup>th</sup> ed, Pearson.

**Prerequisites:**

QMIS 210

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**Course Number:**

QMIS-318

**Title:**

Technology Management

**Contents:**

Provides a foundation for managing technology in a competitive environment with global implications. Topics include, development of technology policy and strategy, management and implementation of new technologies, technology sourcing, technology development and life cycle, economic and financial analysis of technology, the innovation process and its impact on organization, and technology transfer mechanisms.

**References:**

**Corporate Information Strategy & Management**, *Applegate, Austin* , 8<sup>th</sup> ed. McGraw-Hill.

**Prerequisites:**

QMIS 210 & QMT 230

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**Course Number:**

QMIS-320

**Title:**

Applied Modeling & Forecasting

**Contents:**

Intends to develop skills to use modeling techniques through statistical packages. In addition to teaching the basic concepts and methodology of data modeling, the course stresses its techniques as a tool in solving business problems in prediction and forecasting. Major topics include simple and multiple linear regression, inference of regression analysis, modeling of qualitative data, introduction to time series analysis, exponential smoothing, trends analysis and seasonal analysis

**References:**

**Forecasting Methods for Management**, *Hakridakis & Wheelwright*, John Wiley.

**Prerequisites:**

QMIS 220

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**Course Number:**

QMIS-410

**Title:**

Quality & Productivity Management

**Contents:**

Provides the tools and skills to enhance the competitive advantages of business organizations in quality and productivity. Topics include product and service quality measurement, total quality management (TQM), statistical process control, control charts for attributes and variables, process-capability analysis, acceptance sampling, quality function deployment, Taguchi method, quality certification (ISO 9000 standards), productivity management cycle, and productivity measurement, analysis and improvement.

**References:**

**Quality Management, Organization, and Strategy**, *James R. Evans*, , 6<sup>th</sup> ed, South Western Cengage learning.

**Prerequisites:**

QMIS 220 & QMIS 310

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**Course Number:**

QMIS-412

**Title:**

Applied Topics in Service Operations Management

**Contents:**

Provides application of operations management concepts and techniques in service organizations. Topics include the principles of design, operating and control of service delivery systems such as distribution organizations, restaurants, hospitals and government agencies. Lectures, cases, assignments focus on such topics as delivery system design, client interface, demand forecasting, performance measurement and improvements, capacity management, and quality control.

**References:**

**Service Operations Management**, *Robert Johnston and Graham Clark*, , 3<sup>th</sup> ed, Prentice Hall.

**Prerequisites:**

QMIS 210

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**Course Number:**

QMIS-415

**Title:**

Project Management & Scheduling

**Contents:**

Addresses the concepts, principles and techniques of project management. Topics include project organization, project planning, project scheduling (Gantt charts, CPM, PERT), project crashing, project budgeting, project material requirements planning, and project evaluation (cost, time and quality).

**References:**

**Successful Project Management**, *Gido & Clements*, Thomson.

**Prerequisites:**

QMIS 210

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**Course Number:**

QMIS-420

**Title:**

Business Data Analysis

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**Contents:**

Provides applied skills and tools to analyze business data through the use of statistical packages and business case studies. Topics may include nonparametric techniques, further topics in time series, multivariate analysis of variance, canonical correlations, principles components and factor analysis, with applications in business.

**References:**

Open to the professor

**Prerequisites:**

QMIS 130, QMIS 320

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**Course Number:**

QMIS-425

**Title:**

Simulation and analysis of Business Systems

**Contents:**

This course introduces the students to the simulation process in business applications. Topics include, introduction to the development of computer simulation as a decision-making tool, methods and techniques of simulation, investigation of computer simulation methodology and its application in the analysis of business systems such as service waiting lines, birth-and-death process, and operations planning and scheduling.

**References:**

**Simulation With Arena**, David Kelton, Randall Sadowski, Nancy Swets , 5<sup>th</sup> ed, *Payne*. McGraw-Hill.

**Prerequisites:**

QMIS 210, QMIS 220

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**Course Number:**

QMIS-428

**Title:**

Process Management and Continuous Improvement

**Contents:**

This course is designed to introduce senior students to the effective process design and improvement in service, government, and manufacturing organization. Topics include, the systematic approach for designing processes, process analysis and documentation in both service and manufacturing organizations, theory and practice of continues improvement, tools and techniques.

**References:**

**Improving Performance**, 2<sup>th</sup> ed, by *Geary Rummler & Alan Brache*..

**Prerequisites:**

QMIS 220, QMIS 310

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**Course Number:**

QMIS-473

**Title:**

Project in Management Science

**Contents:**

This is a capstone course that helps teams of students integrate and apply their business and management science related knowledge and skills acquired in earlier course to cover the entire life cycle of activation in implementing the state-of-the-art management science technique to solve real world business problems for external clients (profit or nonprofit organizations in the community). Topics covered include design of field studies and sampling techniques, questionnaire design,

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sampling errors, statistical analysis through the use of statistical packages (e.g., SPSS, Splus), management science models building, calibration and analysis through the use of management science packages (e.g., LINDO, CPLEX, GAMS).

**References:**

Selected materials related to the assigned topics.

**Prerequisites:**

QMIS 310, QMIS 316, QMIS 320.

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**Course Number:**

QMIS-481

**Title:**

Internship in Management Science

**Contents:**

This course is designed to provide students with practical experience through temporary employment in appropriate organizations operating in Kuwait. The temporary employment plan will be jointly set by the student(s) academic advisor and the host organization(s). The progress of the students will be supervised by the faculty member on a weekly basis. At the end of the training period, each student is asked to submit a final report describing his/her learning experience and the skills gained. The temporary employment should be at least 10 weeks long with 10 hours per week.

**Prerequisites:**

Completion of 90 credit hours.

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**Course Number:**

QMIS-493

**Title:**

Special Topics in Management Science

**Contents:**

This course covers current issues and topics in management science not usually covered by other courses.

**References:**

Selected materials by the instructor

**Prerequisites:**

QMIS 220, QMIS 310

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