

**UNIVERSITY OF MASSACHUSETTS DARTMOUTH  
CHARLTON COLLEGE OF BUSINESS  
DEPARTMENT OF DECISION AND INFORMATION SCIENCES**

**COURSE:** POM 333 Quantitative Business Analysis (ONLINE)  
Prerequisite: MTH 103; POM 212; and Junior standing

**PROFESSOR:** Dr. Bharatendra Rai  
Office: Charlton Building, Room 326  
Phone: (508) 910-6434  
Email: [brai@umassd.edu](mailto:brai@umassd.edu)

**TIME/PLACE:** Online

1. **COURSE DESCRIPTION:** Provides students with an appreciation of the power and limitations of common managerial techniques used in the analysis of business problems requiring a quantitative decision-making approach. The emphasis is on a careful presentation of problem formulation, mathematical analysis, and solution procedures using examples involving business situations. Computer use is emphasized.
2. **COURSE OBJECTIVES:** Upon completion of this course you will learn basic concepts and techniques of quantitative decision making process; e.g. problem diagnosis and formulation and solution techniques such as decision making under risk, uncertainty and competition, games, linear programming, networks, simulation, waiting lines. During this course you will:
  - \* Learn to use a wide range of quantitative methods for decision-making and develop an ability to recognize and accomplish a quantitative solution to a business problem.
  - \* Learn to integrate quantitative methods for decision-making with accepted qualitative approaches to administration.
  - \* Have the opportunity to gain experience in acting as a member of a decision-making team in the analysis and presentation of solutions in case problems; particularly through the use of the computer.
  - \* Be able to solve problems by applying the commercially available software.
  - \* Be able to apply management science techniques to address global issues.
  - \* Be able to broaden your knowledge and appreciation of the worth of the subject matter through additional reading.

### 3. COMPETENCIES AND CONTACT HOURS:

<u>Competencies</u>	<u>Contact Hours</u>	
The student will be introduced to:		
* Analytical tools of management	3	3
The student will learn problem solving using:		
* Decision models	6	9
* Decision making under competition	3	12
* Decision trees	3	15
* Project management	6	21
* Queuing theory	4	25
* Simulation	5	30
* Linear Programming	9	39
* The transportation and assignment models	6	45

### 4. REQUIRED COURSE MATERIAL

Render, B., Stair, R.M., Jr., and Hanna M.E. "Quantitative Analysis for Management",  
Prentice-Hall.

“QM for Windows link”

[http://wps.pearsoned.co.uk/ge\\_taylor\\_introms\\_10/150/38494/9854540.cw/content/index.html](http://wps.pearsoned.co.uk/ge_taylor_introms_10/150/38494/9854540.cw/content/index.html)

### 5. CLASS POLICY

- Please do studying, preparation, reading, assignments, quizzes, etc. in a timely manner.
- If you decide to drop the course, you must still do the necessary paperwork immediately with the Registrar's Office; not completing assignments and tests will lead to an F grade in the course for the semester.
- Knowledge and understanding of fundamental concepts and procedures from material previously covered and generally needed for subsequent work will be assumed at all times. In general, students should expect that, normally, the emphasis of each test will be on the material covered since the previous test.
- Online quizzes available on the course website need to be completed before the corresponding test. Note that they will not be available after that.

- Homework assignments must be submitted on the course website before the corresponding test. Any late submission will receive grades out of 50% points.

## 6. COMMUNICATION POLICY

When sending emails, include “POM333 ONLINE” in the subject area. This will help to answer your queries in a timely manner. Usually response time is expected to be within 24 hours.

## 7. TECHNICAL SUPPORT CONTACT INFORMATION

UMass Dartmouth has several ways for you to get technical support for myCourses.

### **Self-Service Knowledge Base:**

<http://stknowbase.umassd.wikispaces.net/Welcome>

### **On-Campus myCourses Student Help Line**

Monday – Friday

8am-5pm

508-999-8505

[myCoursesHelp@UmassD.edu](mailto:myCoursesHelp@UmassD.edu)

### **Off-Hours and Holiday Help**

Open 24hrs

888-989-7074

[umd.echelp.org](http://umd.echelp.org)

## 8. UNIVERSITY POLICIES

*Academic Honesty:* All work is to be completed individually. Students are expected to participate in the course within the guidelines of the Academic Ethical Standards published in the General Catalogue. Instances of academic dishonesty will be penalized to the greatest extent possible. Plagiarism is a serious offense.

*Students with Disabilities:* Disabled Student Services (DSS) provides support to both learning and physically disabled students. If you have a disability that requires accommodation you should contact DSS. If you have a documented disability and require accommodations to obtain equal access in this course, please contact the instructor at the beginning of the semester and provide the appropriate paperwork from the Center for Access and Success. The necessary paperwork is obtained when you bring proper documentation to the Center for Access and Success, which is located in Group I (Liberal Arts Building), Room 016, and phone: 508-999-8711.

*Incomplete:* According to the university catalogue, an incomplete may be given only in exceptional circumstances, at the instructor’s discretion. The student must be passing at the time of the request, or sufficiently close to passing. If the work is not completed within one year of the recording of the incomplete grade, the grade will

become an F (I). The incomplete policy for this course is that at least 80% of the course must be complete and an exceptional circumstance (for example, a medical issue) must exist. If you feel you require an incomplete for an exceptional reason, you need to email me and state your reasons for the incomplete in writing. I will then decide whether to consider granting the incomplete. If I agree to consider it, we will then have to meet to work out a specific course of action.

*Changes:* Instructor can and may update and change this syllabus using all registered students via COIN and school email accounts.

## 9. GRADING POLICY

The course grade will be determined by the total of the scores received from the following:

<u>Items</u>	<u>Weight</u>
Tests (three)	50%
Online quizzes	25%
Homework assignments	25%
	-----
	100%

## 10. CLASS SCHEDULE

### MODULE-1

---

#### **Chapter 1: Introduction**

What is Quantitative Analysis (QA)?

The QA approach;

Tools of QA;

#### **Module 4: Game Theory**

#### **Chapter 2: Probability Concepts & Applications**

Applications of probability concepts;

A review of probability concepts.

### TEST-1

### MODULE-2

---

#### **Chapter 3: Decision Analysis**

Decision Making (DM) process;

DM under risk, uncertainty, and competition;  
Expected value of perfect information;  
Sensitivity analysis;  
Decision Trees and Utility Theory;  
Construction and Evaluation of a decision tree;  
Measuring utility and constructing a utility curve.

**Chapter 13:** Project Management

Constructing a network model;  
Critical Path Method (CPM), and PERT;  
Probability of project completion time;  
Planning and scheduling project costs;  
Project crashing with CPM;

**TEST-2**

MODULE-3

---

**Chapter 14:** Queuing Theory

Operating characteristics of the single-server waiting line systems;  
Multiple channel queuing models;  
Applications of queuing theory.

**Chapter 15:** Simulation

The Monte Carlo process;  
Computer simulation of the simulation problems;  
Application of simulation techniques (maintenance, inventory, finance, marketing, and production)

**Chapter 5:** Forecasting

Types of forecasting techniques;  
Measuring the validity of forecasting techniques

**TEST-3**

Extra Credit Cases (Max 5 points)

---

**Due date:** On or before the day of Test-3

**(1) Chapter-14** *Case: New England Foundry*

**(2) Chapter-15** *Case: Statewide Development Corporation*