



# University of Management and Technology

## **School of Business and Economics**

Course Title: Decision Models  
Course Code: OM 320  
Department: Operations and Supply Chain

### **SBE Vision**

SBE envisions its success in the sustainable contribution that it will make to the industry, academia and research in public and private sector. SBE will lead by providing professionally competent and ethically conscious human resources engaged in the global and local context to foster socio-economic growth and sustainability for the society. SBE envisages having faculty with high research potential and a deep desire for cutting edge research including collaboration with national and international partners.

### **SBE Mission**

Being a research-oriented and student-centric business school, we emphasize research publications in impact journals as well as state-of-the-art learning methodologies. We will prepare our students to become the future ethical business leaders and the guiding post for the society, while equipping them with the knowledge and skills required by world-class professionals. We will be the leading choice for organizations seeking highly talented human resource. SBE will foster internationalization with key stakeholders and actively work to exchange best practices with business schools across Pakistan through collaborations, workshops, conferences and other means.

### **Program Objectives**

The program of Bachelor of Business Administration (Honors) is designed to prepare the graduates for corporate world as a managers and decision makers to do the business activities in industry. The program not only exposes participants to the fundamental knowledge of business management but also imparts cutting edge analytical and quantitative decision-making skills, preparing participants to take the challenges of effectively managing businesses.

## **Course Objectives**

A major function of a business manager or an entrepreneur is to make decisions. Success of the organization or business depends heavily on soundness of these decisions. Quantitative methods have always played an important role in enhancing the soundness. However, with recent development in information technology, the role of quantitative techniques in decision making has increased manifold. More and more managers are using such techniques to complement their experience and expertise in business world.

This course is aimed at providing the necessary tools to managers and entrepreneurs for decision making in variety of business situations. Participants will learn to formulate the real life business problems into quantitative models. Teaching of conceptual framework of these tools will be supplemented by hands on application of various software packages that will aid in solving these models. Expertise will be developed in interpretation of these solutions and their use in decision making.

## **Learning Objectives**

Upon successful completion of this course, the participants will be able to:

1. Appreciate the important role that quantitative methods play in decision making in today's business world
2. Describe real life business situations by quantitative models
3. Solve and interpret these models using variety of techniques
4. Utilise these solutions in making better decisions

## **Learning Outcomes**

After the completion of this course student should be able to:

1. Know the basics concepts of decision making,
2. Appreciate the concept of linear programming and its application in the corporate world.
3. Develop an ability to use the different decision making models in different areas of business. .
4. Learn the concept of simulation and forecasting for the growth of the business.

**Teaching Methodology (List methodologies used –example are given below)**

Interactive Classes/Lectures	Case Based Teaching/Presentations
Computer Software Tools	Skill Development Exercises /Applied Projects
Simulations	Text Books

**STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK**

**Class Policy:-**

- **Be On Time**  
You need to be at class at the assigned time. After 10 minutes past the assigned time, you will be marked absent.
- **Mobile Policy**  
**TURN OFF YOUR MOBILE PHONE!** It is unprofessional to be texting or otherwise.
- **Email Policy**  
**READ YOUR EMAILS!** You are responsible if you miss a deadline because you did not read your email.  
Participants should regularly check their university emails accounts regularly and respond accordingly.
- **Class Attendance Policy**  
A minimum of 80% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddings are absences and will not be counted as present. You have the opportunity to use 6 absences out of 30 classes. Participants with less than 80% of attendance in a course will be given grade 'F' (Fail) and will not be allowed to take end term exams. International students who will be leaving for visa during semester should not use any days off except for visa trip. Otherwise they could reach short attendance.
- **Withdraw Policy**  
Students may withdraw from a course till the end of the 12th week of the semester. Consequently, grade W will be awarded to the student which shall have no impact on the calculation of the GPA of the student. A Student withdrawing after the 12th week shall be automatically awarded "F" grade which shall count in the GPA.
- **Moodle**  
UMT –LMS (Moodle) is an Open Source Course Management System (CMS), also known as a learning Management System (LMS). Participants should regularly visit the course website on MOODLE Course Management system, and fully benefit from

its capabilities. If you are facing any problem using moodle, visit <http://oit.umt.edu.pk/moodle>. For further query send your queries to [moodle@umt.edu.pk](mailto:moodle@umt.edu.pk)

- **Harassment Policy**

Sexual or any other harassment is prohibited and is constituted as punishable offence. Sexual or any other harassment of any participant will not be tolerated. All actions categorized as sexual or any other harassment when done physically or verbally would also be considered as sexual harassment when done using electronic media such as computers, mobiles, internet, emails etc.

- **Use of Unfair Means/Honesty Policy**

Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.

- **Plagiarism Policy**

All students are required to attach a "Turnitin" report on every assignment, big or small. Any student who attempts to bypass "Turnitin" will receive "F" grade which will count towards the CGPA. The participants submit the plagiarism report to the resource person with every assignment, report, project, thesis etc. If student attempts to cheat "Turnitin", he/she will receive a second "F" that will count towards the CGPA. There are special rules on plagiarism for final reports etc. all outlined in your handbook.

- **Communication of Results**

The results of quizzes, midterms and assignments are communicated to the participants during the semester and answer books are returned to them. It is the responsibility of the course instructor to keep the participants informed about his/her progress during the semester. The course instructor will inform a participant at least one week before the final examination related to his or her performance in the course.

### **Course Outline**

Course code: OM 320

Course title Decision Models

Program	BBA(H)/BBIS
Credit Hours	3 Credit Hours
Duration	15 Weeks
Prerequisites (If any)	QM-210/Equivalent

### **Grade Evaluation Criteria**

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

## **Marks Evaluation**                      **Marks in percentage**

Quizzes	15
Assignments	15
Mid Term	20
Attendance & Class Participation	05
Case Analysis	05
Final exam	40
Total	100

### **Recommended Text Books:**

**Spreadsheet Modelling & Decision Analysis** (5<sup>th</sup> Edition)    by *Cliff. T.Ragsdale*

### **Reference Books:REFERENCES**

1. Data Analysis & Decision Making    3<sup>rd</sup> Edition    by *Albright, Winston, Zappe*
2. Quantitative Analysis for Management    9<sup>th</sup> Edition    by *Render, Stair, Hanna*

**Course:** Decision Models    **Course code:** OM 320---**Book:** Spreadsheet Modelling & Decision Analysis (5th Edition) by Cliff. T.Ragsdale

<b>Sr. No</b>	<b>Topics to be covered</b>	<b>Learning Objectives of this topic</b>	<b>Expected outcomes from Students</b>	<b>Teaching Method</b>	<b>Assessment Criteria</b>	<b>Deadlines and Homework</b>
1	Introduction to Quantitative Models for Decision Making, Comparison of Quantitative and Qualitative Approaches of Decision Making, Good Decisions vs Good Outcomes Types of Decision Models (Prescriptive, Predictive, Descriptive)	Knowing the basic concept of decision making in businesses. How the decision are made and what is the importance of decision making in life and corporate world	Understand the importance of Decision Making in businesses  Appreciate the role of formal decision making models  Able to differentiate between different types of models and select the one suitable for a given situation	Lecture, Presentation Skill Development Exercise	Exercises	
2	Introduction to Optimization Modeling , Constrained Optimization Models  Fundamentals of Linear Programming (LP)  Components of a Linear Program (Decision Variables, Objective Function, Constraints)	Fundamentals of the LP Modelling and how the LP model is formulated to solve the business issues.	Appreciate need of LP in Business Decision making Formulate a basic LP Represent Constraints in form of mathematical expressions	Lecture, Presentation Skill Development Exercise	Class Participation	

3	LP Formulations (Product-Mix, Blending, Scheduling,  Financial Planning)	Understanding the different model of LP programming	Formulate various types of LP	Lecture, Presentation Skill Development Exercise	Exercises	
4	Computer Modeling and Solutions of LP	Lab work and computer modeling on solver	Determining Optimal solutions using computer tools (Excel SOLVER) Interpreting SOLVER output	Lecture, Presentation Skill Development Exercise	Quiz Assignment	HW1
5	Sensitivity Analysis , Post Optimality Analysis Shadow Prices, Reduced Costs	Concept of Sensitivity Analysis and Shadow prices and reduced costs is known	Evaluation What-if scenario using SOLVER Sensitivity Report,	Lecture, Presentation Skill Development Exercise	Quiz Assignment	Video HW2
6	LP Applications (Transportation, Assignment, Network Problems, Aggregate Planning)	Examples of LP Models in various areas	Application of LP in various areas of business management	Lecture, Presentation Skill Development Exercise	Class Participation	
7	Integer Programming (IP) Models, Use of Binary Variables in IP Models	Concept of Integer Programming and its application	Use of binary variables in formulating YES /NO type of decision scenarios for optimization	Lecture, Presentation Skill Development Exercise	Assignment	HW3

8		<b>Mid Terms</b>				
9	Introduction to Forecasting , Time Series Forecasting Models, Exponential Smoothing	Know the application of forecasting and time series in business world	Application of Exponential Smoothing model for developing better forecasts	Lecture, Presentation Skill Development Exercise		
10	Measuring Forecasting Errors Forecast Bias, MAD, RMSE	Learn the forecasting errors and its measurement methods	Determination of forecasting errors , and using it as criterion for selection of most appropriate forecasting method	Lecture, Presentation Skill Development Exercise	Computer Exercise Case study	Video
11	Causal Methods of Forecasting,	Understand the simple regression and multiple regression	Use Linear Regression models for forecasting	Lecture, Presentation Skill Development Exercise	Quiz Written Case	
12	Decision Making under Uncertainty, Pessimistic and Optimistic Approaches to decision analysis, Rational decision models based on Expected Monetary Value (EMV), Decision Trees (Construction & Solution)	Concept of rational decision making in certain and uncertain environment	Ability to represent a complex decision making situation in form of a decision tree, Solution of decision trees to determine the Optimal decision	Lecture, Presentation Skill Development Exercise	Skill Development Exercise	HW4



13	Value of Information, Value of Perfect Information, Value of Experimentation, Multistage Decision Making Models		Evaluate the value of information in decision analysis	Lecture, Presentation Skill Development Exercise	Quiz Skill Development Exercise	Video
14	Simulation Models, Monte Carlo Simulation Method, Using Excel for Simulation	Simulation Models	Develop basic business simulation models using Excel	Lecture, Presentation Skill Development Exercise	Computer Exercises Project	Project
15	Issues and Opportunities of application of quantitative models in businesses in Pakistan				Class Participation/ Discussion	