Course Title:	Decision Models
Course Code:	OM320
Department:	Operations and Supply Chain

HSM Vision

HSM envisions its success in the sustainable contribution that it will make to the industry, academia and research in public and private sector. HSM 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. HSM envisages having faculty with high research potential and a deep desire for cutting edge research including collaboration with national and international partners.

HSM 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. HSM 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

BBA aims to develop in participants:

1. Cutting edge knowledge and understanding across a broad range of vital business subjects and management concepts
2. Critical thinking skills that enables participants to see logical and rational in ideas and proposals
3. Careers in management, training and consultancy. The flexibility in programs' design enables participants to choose a portfolio of courses to match their preferred career route, or to keep their options open
4. International management effectiveness in different cultural contexts. The global mix of participants, the international exchange and project opportunities, and the increasingly international curriculum, all help to achieve this aim
5. Ability to apply theory in practice by having hands on experience in real world scenario

Course Objectives

A major function of a business manager or an entrepreneur is to make decisions. Success of the organisation 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 to provide 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 aide in solving these models. Expertise will be developed in interpretation of these solutions and their use in decision making.

Learning Outcomes

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

Teaching Methodology

Following instructional tools and methodologies will be utilized during the course:

Interactive Discussions	Skill Development Exercises	Business Simulations / Games
Case Studies	Presentations	Computer Software Tools

CLASS POLICY

1. **STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK**
2. **ATTENDANCE**

- ***Be On Time***

  You need to be in class at the assigned time. You will be marked absent if you are not present at the time of marking attendance at the start of the class.

- ***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.

3. MOBILE POLICY

TURN OFF YOUR MOBILE PHONE! It is unprofessional to be texting or otherwise. Your phone should not be visible or heard during the class sessions.

4. EMAIL

READ YOUR EMAILS! You are responsible if you miss a deadline because you did not read your email.

You should regularly check your university emails accounts and respond accordingly.

5. 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.

6. 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

Assignments in this course will be submitted on Moodle. You will need to follow the instructions related to assignment submissions and deadlines as communicated with the assignment.

7. 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.

8. 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.

9. 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.

10. 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 / her performance in the course.

COURSE OUTLINE

Program	BBA
Credit Hours	3
Duration	15 Weeks (3hrs/week)
Prerequisites (If any)	
Resource Person Name and Email	Kamran Rashid kamranrashid@umt.edu.pk
Counseling Timing (Room# 3N-2)	Monday, Tuesday, Wednesday 4:30 P.M. to 6:30 P.M. Other times by appointment
Contact no.	(042) 111 300 200 Ext. 3347
Web Links:- (Face book, Linked In, Google Groups, Other platforms)	

Grade Evaluation Criteria

Following is the criteria for the distribution of marks to evaluate final grade in this course.

Instrument	Weightage
Quizzes	5%
Weekly Assignments	5%
Case Analysis	5%
Presentations	5%
Class Participation	5%
Guest Speaker Session Report	5%
Midterm	30%
Final Exam	40%

TEXT BOOK (Mandatory)

Spreadsheet Modelling & Decision Analysis (5th Edition) by *Ragsdale*

ADDITIONAL REFERENCES

1. Data Analysis & Decision Making (3rd Edition) by *Albright, Winston, Zappe*
2. Quantitative Analysis for Management (9th Edition) by *Render, Stair, Hanna*
3. Business Statistics by *Groebner*

COMPUTER APPLICATIONS

Software packages like Excel with various add-ons will be extensively used in this course. Additional workshops/tutorial sessions may be arranged to familiarize participants with these tools.

WEEKLY ASSIGNMENTS

1. A short assignment will be given every week and will be due at the START of the next session
2. Assignments should be in typed form, and need to be uploaded on Moodle before the deadline
3. Serious errors in grammar, spellings, and formatting will result in loss of points. So please PROOF READ your work before submission
4. You are not allowed to share or show your assignment output to any member outside your team under any circumstances, even after the submission. Failure to comply will lead to disciplinary action
5. The weekly assignments will be graded on a three point scale

0 point	*Not submitted / Unsatisfactory*
1 point	*needs major improvement*
2 points	*Satisfactory*

QUIZZES

1. A total of 2-3 quizzes will be conducted
2. Quizzes may be announced or be un-announced
3. From a total of (n) quizzes, best (n -1) quizzes may be considered for the final grade
4. Make-up quizzes will not be allowed

PRESENTATIONS

Each participant will be required to make at least one presentation, either in a team or individually

CASE ANALYSIS

1. You will be required to work on 2 - 4 case studies, and submit your analysis in a report form for each case study
2. All the case analysis will be conducted in teams
3. The report should adhere to the standard norms of professional report writing. The grade of the case report will depend on the thoroughness and soundness of the analysis, as well as the presentation of analysis in the report
4. All team members are required to participate in preparing the case analysis. In case a member fails to participate, it is the responsibility of the remaining team members to exclude his/her name from the submitted assignment, and notify the resource person

GUEST SPEAKER SESSION REPORT

Participants will submit a 2-4 pages report on their personal learning experiences of the Guest Speaker session

CLASS PARTICIPATION

1. You are required to attend the classes regularly and with punctuality
2. You should come fully prepared in each class, and participate actively in class activities

MID-TERM TEST

1. Mid-Term test will be conducted during class regular class timings in the eighth week
2. The test will be Open Book / Open Notes

END-TERM EXAM

1. End-Term Exam will be comprehensive (i.e. will include pre-mid as well as post-mid contents)
2. The exam will be Open Book / Open Notes

Required Material

You are required to bring the following to every class:

1. **Textbook**
2. **Calculator**
3. **USB Flash drive (personal, non-sharing)**
4. Ring file (for notes) (OPTIONAL)
5. Lead pencil (and accessories) (OPTIONAL)

NOTE: Failure to bring any of the first three things may adversely affect your final grade.

Course Content

Week	Topics	Chapters	Learning Outcomes	Activities	Assessment Tools
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)	1	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	Introduction, Discussion	Assignment
2	Introduction to Optimization Modeling , Constrained Optimization Models Fundamentals of Linear Programming (LP) Components of a Linear Program (Decision Variables, Objective Function, Constraints)	2	Appreciate need of LP in Business Decision making Formulate a basic LP Represent Constraints in form of mathematical expressions	Discussion, Presentation Exercise	Assignment
3	LP Formulations (Product-Mix, Blending, Scheduling, Financial Planning)	3	Formulate various types of LP	Discussion, Presentation Skill Development Exercise	Assignment, Case Study
4	Computer Modeling and Solutions of LP	3	Determining Optimal solutions using computer tools (Excel SOLVER) Interpreting SOLVER output	Discussion, Discussion, Presentation, Skill Development Exercise	Assignment, Case Submission & Discussion Quiz
5	Sensitivity Analysis , Post Optimality Analysis Shadow Prices, Reduced Costs	4	Evaluation What-if scenario using SOLVER Sensitivity Report,	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Quiz

6	LP Applications (Transportation, Assignment, Network Problems, Aggregate Planning)	**5**	Application of LP in various areas of business management	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Case Discussion, Quiz
7	Integer Programming (IP) Models, Use of Binary Variables in IP Models	**6**	Use of binary variables in formulating YES /NO type of decision scenarios for optimization	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Case Submission & Discussion
8	***MID-TERM***				*Mid-Term Test*
9	Introduction to Forecasting , Time Series Forecasting Models, Exponential Smoothing	**11**	Application of Exponential Smoothing model for developing better forecasts	Discussion, Presentation, Discussion, Skill development Exercise,	Assignment
10	Measuring Forecasting Errors Forecast Bias, MAD, RMSE	**11**	Determination of forecasting errors , and using it as criterion for selection of most appropriate forecasting method	Discussion, Presentation, Discussion, Skill development Exercise	Presentations, Assignment, Quiz
11	Causal Methods of Forecasting, Regression Analysis	**9**	Use Linear Regression models for forecasting	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Case Submission & Discussion
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)	**15**	Ability to represent a complex decision making situation in form of a decision tree, Solution of decision trees to determine the Optimal decision	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Case Discussion, Quiz
13	Value of Information, Value of Perfect Information, Value of Experimentation,	**15**	Evaluate the value of information in decision analysis	Discussion, Presentation, Discussion, Skill development	Presentations, Assignment, Case Discussion

	Multistage Decision Making Models			Exercise,	
14	Simulation Models, Monte Carlo Simulation Method, Using Excel for Simulation	**12**	Develop basic business simulation models using Excel	Discussion, Presentation, Discussion, Skill development Exercise,	Presentations, Assignment, Case Submission & Discussion, Quiz
15	*GUEST SPEAKER* Issues and Opportunities of application of Decision models in businesses in Pakistan			Discussion, Presentation, Discussion,	