GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Subject Code: 3735006
Semester – III
Subject Name: Decision Modelling

Type of course: Program Elective V

Prerequisite: Nil

Rationale:
This course provides the knowledge and practice regarding different Develop quantitative models for unstructured decision problems by identifying controllable factors, uncontrollable factors, performance measures, and relationships also this practice gives Entrepreneur to take right decision at right time.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Contents	Total Hrs
1	Develop quantitative models for unstructured decision problems by identifying controllable factors, uncontrollable factors, performance measures, and relationships.	07
2	Develop and analyze financial planning models and perform sensitivity analysis to identify critical factors.	08
3	Measure uncertainty using probability, and perform Monte Carlo simulation to gain insight into practical business problems.	08
4	Develop and analyze decision tree models for sequential decision problems and determine value of information.	08
5	Use descriptive statistics and charts to summarize cross-sectional and time series data.	06
6	Develop regression models to explain variation, measure relationships, and make predictions.	08
7	Identify patterns in time series data, develop appropriate models, and make forecasts.	
		45

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Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	**10**	**30**	**30**	**10**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Hamburg, M., and P. Young. *Statistical Analysis for Decision Making*. Fort Worth, TX: Dryden Press,.
2. Bertsimas, Dimitris, and Robert Freund. *Data, Models, and Decisions: The Fundamentals of Management Science*. Charlestown, MA: Dynamic Ideas, 2004. ISBN: 9780975914601.
3. McClave, J., P. Benson, and T. Sincich. *A First Course in Business Statistics*. Upper Saddle River, NJ: Prentice Hall, 2000. ISBN: 9780130186799.
4. Hamburg, M., and P. Young. *Statistical Analysis for Decision Making*. Fort Worth, TX: Dryden Press

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Able to understand structure of decision problems	20
CO-2	Able to identify relevant variables, parameters, and sources of uncertainty in the problem	30
CO-3	Learn how to move from structuring a problem to actually building a mathematical model.	30
CO-4	Learn about optimization models, decision tree models, and simulation models and also learn to incorporate uncertainty into the model.	20

Term Work: Nil

List of Experiments: Nil

Major Equipment: Nil

List of Open Source Software/learning website:

1. The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester.
2. NPTEL
3. http://ocw.mit.edu/courses/sloan-school-of-management/15-060-data-models-and-decisions-fall-2007/download-course-materials/
4. http://msc.maths.ed.ac.uk/or/programme/optional-courses/optimization
5. Excel, LINGO, MiniTAB, R-Programming software