



School of Planning and Architecture: Vijayawada

(An institution of National Importance under the Ministry of Human Resource Development, Govt. of India)

Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

Department of Architecture

Course: MBEM

Subject Code: MBEM-1103

Name- Quantitative Methods and Operations Research

Class: 1st Yr MBEM I Sem
A.Y. 2026-27

Instructors:

Dr. Prashanti Rao

Internal Assessment: 100

Contact Periods/Week: 03 periods. (50 min each)

Total Marks: 100

Time Table:

Monday

Credits: 3

Attendance: Min
75%

Min. Passing Marks: 50% each in Internal & External
Assessment, 50% in Aggregate

Objective: To strengthen the quantitative decision-making capability through delivering the analytical scientific approach to Problem solving, quantitative analysis, Operational research models & modelling process for Managerial Decision Making.

LECTURE PLAN

S.NO	Week	TOPIC OF CLASS LECTURE & DISCUSSION	REMARKS
1	18- 22 August	Fundamental concepts of Operations Research (OR) and its evolution as a scientific approach for decision-making and problem-solving. History, definitions, scope, and phases involved in the OR approach along with its applications in managerial and engineering problems.	Lecture and Discussion
2	25-29 August	Measures of Central Tendency & Dispersion, Probability concepts, Bayes Theorem & Applications,	Lecture and Discussion
3	1-5 September	Probability Distributions: Binomial, Poisson, Normal & Exponential, Sampling & Sampling Distributions, Testing of Hypothesis	Lecture
4	1-5 September	Correlation, Regression & Multivariate Analysis, Forecasting methods	Lecture
5	8-12 September	Discussion upon-Assignment-1	Discussion
	15-19 September	Field Work-Study Trip	
6	22-26 September	Analytic Hierarchy Process (AHP) , Analytic Network Process	Lecture and Discussion
	29-03 October	Fish Bone Analysis, Control Charts, Decision Trees, and Failure Modes and Effects Analysis (FMEA).	Dr.Jyoti Jain Tholiya- Expert Lecture – Basics of Mathematics to understand Statistics- Online- Part-1
7	6-10 October	Linear Goal Programming, Scoring Models, Fuzzy outranking,	
8	13th-17th October	Game theory, inventory models,	Lecture and Discussion
9	20th- 24th October	Replacement and sequencing models,	Lecture and Discussion
10		Mid Semester- Assignment-2	
11	27th-31st October	simulation techniques, vendor rating systems, and queuing models.	Lecture and Discussion

12	3-7 November	OR tools for applied in time management, cost control, quality management, resource optimization, risk management, contract administration, procurement management, and value engineering.	Lecture and Discussion
13	10-14 November	use of computer applications and statistical software such as SPSS	Lecture and Discussion
14	17-21 Nov	use of computer applications and statistical software such as Minitab, for solving complex mathematical and statistical problems involved in Operations Research.	Lecture and Discussion
15	24-28 Nov	Operations Research techniques to construction management areas including time, cost, quality, resource, risk, and procurement management.	Assignment Introduction
16	4th December	Assignment III Submission	

Internal Assessment Evaluation

S. No.	Evaluation	Marks
1	Internal Test / Presentation (Assignment 1)	30
2	Mid-Term Assessment	30
3	Internal Test / Presentation (Assignment 2)	40
Total		100

Reference Books

1. Frederic S.Hillier, Gerald J.Liberman,2005 Introduction to Operations Research, Tata
2. Gupta M.P. and R.B. Khanna, 2004, Quantitative Techniques for Decision Making, Prentice Hall of India
3. Natarajan,A.M, Balasuramani.P,Tamilarasi, A2009 Operations Research, Pearson Education
4. Sharma J.K, 2006, Operations Research Theory and Practice, Macmillan India Ltd. 5. Wisniewski MIK, 2004, Quantitative Methods for Decision Makers, Macmillan India Lt
6. Rao M.R Puri MC Operational research and its applications recent trends Allied Publishers Pvt, Ltd
7. David.E. Goldberg 2007 Genetc Algorithm Pearson Education.

Course Instructors:

sd/-
(Dr. Prashanti Rao)

Head of Department:

sd/-
(Prof.Dr.Amitava
Sarkar)