



**Dr. V. N. Bedekar Institute of Management, Thane**  
**Teaching Plan (MMS/PGDM)**  
**Academic Year (2016-2017)**

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Programme Name: MMS / PGDM: **MMS**

Name of the Course: **Quantitative Methods in Operations**

Maximum marks: **100**

No. of Sessions: **15**

Name of the Faculty: **Manish Velankar**

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Weblink:

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**Learning Objectives:**

**To understand simplex method and sensitivity analysis in Linear Programming**

**To understand integer programming and goal programming**

**To understand transshipment problem**

**To understand dynamic programming**

**To understand resource allocation and least cost planning in PERT and CPM**

**To understand waiting line theory and inventory models**

**To understand applications of computers in operations research**

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**Reference Books:**

- 1. Operations Research – An Introduction by Hamdy Taha, Prentice Hall**
- 2. Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill**
- 3. Quantitative Methods/Operations Research by Banerjee**
- 4. Quantitative Methods/Operations Research by Hira Gupta**
- 5. Quantitative Methods/Operations Research by V. Kapoor**

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**Plan:**

DR VN BRIMS/REC/ACA/05



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<b>Session No</b>	<b>Topics to be covered</b>	<b>Books referred/ Recommended/ References- Print/Articles/ News/Research papers/ Online database/ Software /Simulations used</b>	<b>Learning outcomes</b>	<b>Evaluation of Students understanding by MCQs, Quiz, Short Test</b>
1	Linear Programming – Simplex Method, Sensitivity Analysis	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
2	Linear Programming – Simplex Method, Sensitivity Analysis	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
3	Integer Programming - Formulations of I P Models - Gomory's algorithm for the all integer problem	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
4	Integer Programming - Algorithm for mixed inter contiguous variables - Zero - one problems - Implicit Enumeration algorithm	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
5	Goal Programming Concepts – Formulation of Multiple Goal Model – Goals Equality Ranked, Priority Ranking of Goals (non- conflicting Goals – Conflicting Goals)	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
6	Goal Programming – Weighted priority ranking of Goals – Computational	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		



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	approaches to Goal Programming, Applications of Goal Programming			
7	Dynamic Programming – Dynamic versus linear Programming, Applications – Knapsack model, Workforce size model, Equipment replacement model, Investment model, Inventory models - Working and Cases.	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		Test 1
8	Dynamic Programming –Working and Cases.	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
9	Transshipment Model	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
10	PERT / CPM - Distribution of job duration - Basics for the formula used in estimation of job duration and finding variance of the estimates - Uncertain duration and PERT Analysis – Resource allocation and least cost planning Installation of network system – Case Studies.	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		Test 2
11	Waiting Line Models - Single server queues in series and parallel for Erlang Services Time Distributions - Multi Server queues in	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		



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	series and parallel for negative exponential service time distributions - machine Interference - Case Examples - Use of Finite queuing tables for practical problems.			
12	Advanced Inventory Models – EOQ models with non instantaneous replacement and shortages, EOQ for multiple items with space, investment and quantity constraints	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
13	Probabilistic inventory models – Continuous review model, Single period model, multi period Model	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		
14	Use of Computer in OR Studies - Standard available packages - Interpretation of computer outputs - Organizing for OR in an establish merit - OR in corporate planning	Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill		Test 2
15	Case Studies and Presentations			



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**2. Practical Approach : Other activities (At least 4 distinct activities)**

<b>Sr. No.</b>	<b>Activity Name</b>	<b>Topic Covered</b>	<b>Learning outcomes</b>	<b>Source</b>
1	Role Play			
2	Industry Visit			
3	Academic Projects	An industry of student's choice	To apply techniques of operations research in actual project	
4	Book Review	Inventory models topic in Hamdy Taha	To understand various inventory models	
5	Group Discussion			
6	Business Quiz / Business News sharing	Applications of CPM in construction projects	To understand the importance of CPM in construction industry	
7	Videos / Simulation			
8	Use of Software and Labs	Microsoft Excel	To understand the usage of MS Excel in operations research	
9	Any other activity			



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**Evaluation:**

**I) Internal:**

<b>Component</b>	<b>Details</b>	<b>Marks</b>
Class Test	Two tests of 5 marks each	10
Presentation	Project Presentation	20
Case Study		
Participation	Attendance and class participation	10
Others		

**Signature of Faculty**

**Signature of the Co-ordinator**