



Week	Topics	Content	Remark
		Models 1.2. Queuing and simulation models 1.3. Phase of an operation research study	
2	Modeling with Linear Programming	Chapter 2 2.1. Two- variable LP Model 2.2. Graphical LP Solution 2.3. Selected LP Applications 2.4. Computer solution with excel solver and AMPL	<ul style="list-style-type: none"> <li>- Discussing Chapter 2</li> <li>- Homework</li> </ul>
3	The Simplex Method and Sensitivity Analysis	Chapter 3 3.1. LP Model in Equation Form 3.2. Transition from graphical to algebraic solution 3.3. The simplex method 3.4. Artificial starting solution 3.5. Sensitivity analysis	Discussing Chapter 3
4	Network Models	Chapter 6 6.1. Scope and definition of network models 6.2. Minimal spanning tree algorithm 6.3. Shortest-route problem 6.4. Maximal flow model 6.5. CPM and PERT	<ul style="list-style-type: none"> <li>- Discussing Chapter 6</li> <li>- Homework</li> </ul>
5	Review of Basic Probability	Chapter 14 14.1. Laws of probability 14.2. Random variables and probability distributions 14.3. Expectation of a random variable 14.4. Four common probability distributions	<ul style="list-style-type: none"> <li>- Discussing Chapter 14</li> <li>- Quiz chapter 1,2,3,6</li> </ul>
6	Deterministic Inventory Models	Chapter 13 13.1. General inventory models 13.2. Role of demand in the development of inventory models 13.3. Static economic order quantity (EOQ) models 13.4. Dynamic EOQ models	Discussing Chapter 13
7	Markov Chains	Chapter 17 17.1. Definition of a Markov	Discussing Chapter 17

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		chain 17.2. Absolute and n-step transition probabilities 17.3. Classification of the states in a Markov chain 17.4. Steady state probabilities and mean return times of ergodic chain 17.5. First passage time 17.6. Analysis of absorbing states	
<b>8</b>	<b>Semester break – make-up classes only</b>		
9	Classical Optimization Theory	Chapter 20 20.1. Unconstrained Algorithms 20.2. Constrained algorithms	Discussing Chapter 20
10	Nonlinear Programming Algorithms	Chapter 21 21.1. Unconstrained Algorithms 21.2. Constrained algorithms	Discussing Chapter 21
11	Goal programming	Chapter 8 8.1. A goal programming formulation 8.2. Goal programming algorithms	– Discussing Chapter 8 – Quiz chapter 13,14,17,20,21
12	Decision analysis and games	Chapter 15 15.1. Decision making under certainty-analytic hierarchy process 15.2. Decision making under risk 15.3. Decision under uncertainty 15.4. Game theory	Discussing Chapter 15
13	Advanced linear programming	Chapter 7 7.1. Simplex method fundamentals 7.2. Revised simplex method 7.3. Bounded variables algorithm 7.4. Duality Parametric linear programming	– Discussing Chapter 7 – Homework
14-15	Integer linear programming	Chapter 9 9.1. Illustrative applications 9.2. Integer programming algorithms	– Discussing Chapter 9 – Quiz chapter 7,8,9,15

Week	Topics	Content	Remark
		9.3. Travelling salesperson problem	
<b>16</b>	<b>Semester break – make-up classes only</b>		
17-18	Final Exam		

## 10. Book Reference:

- a) Text Book: Operation Research: An Introduction, Taha, Pearson, ISBN # 978-013-1393-1994