

Kuwait University  
Department of Statistics and Operations Research

**Course:** Stat 350: Operations Research II  
**Semester:** Summer Semester 2017  
**Course Type:** 3 h of lecture + 1 h of lab  
**Credits:** 3:1:3  
**Prerequisites:** Stat 210, Stat 250

**Description:** Modeling and solving stochastic operations research problems in queueing, inventory theory, decision making, scheduling, and simulation of complex systems.

**Textbook:** H.A. Taha, Operations Research: An Introduction, 10th edition.

**Course Assessment**

Assignments and quizzes  
Midterm Exams  
Final Exam

**Topics to be covered**

- |   |     |
|---|-----|
| 1. Queueing   | 11h |
| <ul style="list-style-type: none"><li>• Queueing processes and terminology</li><li>• Role of exponential distribution</li><li>• M/M/1 and M/M/s queue disciplines</li><li>• Jackson networks of queues</li><li>• Cost functions and decision making</li></ul> |     |
| 2. Inventory Theory   | 10h |
| <ul style="list-style-type: none"><li>• Setup, holding, and shortage costs</li><li>• Back-ordering</li><li>• Deterministic Economic Order Quantity (EOQ) models</li><li>• Stochastic models: Probabilistic EOQ model, single period models</li></ul>          |     |
| 3. Decision Making  | 9h  |
| <ul style="list-style-type: none"><li>• Decision making without experimentation</li><li>• Decision making with experimentation</li><li>• Decision trees</li><li>• Utility theory</li></ul>  |     |
| 4. Scheduling   | 9h  |
| <ul style="list-style-type: none"><li>• Terminology</li><li>• Single machine</li><li>• Two-machine flow shop</li></ul>  |     |
| 5. Simulation of complex systems  | 7h  |
| <ul style="list-style-type: none"><li>• Queues</li><li>• Inventory systems</li><li>• Supply Chain</li><li>• Production</li></ul>  |     |

**Observation**

Students are expected to use OR software to solve many of the assignments and to interpret output obtained by such software.

**Lab Component**

During the lab sessions, students will use TORA, Excel, and/or GAMS to solve problems related to the syllabus. Lectures will take place in the lab where OR packages will be used and students will be taught how to analyze the obtained results.