

Course Specifications

Programme(s) on which the course is given M.Sc. of Computer Science

Major or minor element of programs	Major
Department offering the program	Mathematics
Department offering the course	Mathematics
Academic year / Level	Post-graduate studies
Semester	
Date of specification revision	2000-2010
Date of specification approval	2000-2010

A- Basic Information

Title: Optimization Theory	Code: M6317		
Credit Hours: 2	Total: 2 hr.		
Lecture: 2	Tutorial: -	Practical: -	Other: -

B- Professional Information

1 – Overall Aims of Course

To introduce the important ideas in optimization which are fundamental. To provide the students not going beyond a single introductory course with enough understanding and confidence to appreciate the strengths and inherent limitations of optimization approach.

2 – Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

The student should be able to

- a1- To know optimization techniques.
- a2- To know real life decisions don't arise with technical labels attached such as programming or risk analysis simulation.
- a3- Understand the computing simulation techniques.

b- Intellectual Skills

- b1- Increasing their skills in formulating and building formal models of complex decisions environments in perceiving the critical issues to be resolved.
- b2- To be able to develop simulation methodologies.
- b3-** To focus on the value of information derived from an optimization research solution
- b4- attempts to give an accurate representation of how a hypothetical example could be applied in a real situation.

c- Professional and Practical Skills

c1- Apply the knowledge representation techniques to different problems, while discussing the pros and cons.

c2- Develop skills in formulating models specifically in translating a verbal description of a decision problem into an equivalent mathematical model.

d- General and Transferable Skills

d1- Building models specifically in translating a verbal description of a decision problem into an equivalent mathematical model..

d2- The exposition of computer simulation is expanded and reorganized to give greater prominence to the model building aspects of the approach.

3- Contents

Topics	No. of hours	Lecture
Introduction to dynamic optimization models	4	2
Integer programming and combinatorial models	6	3
Advanced techniques in nonlinear programming	6	3
Introduction to stochastic programming models	6	3
Computer simulation of management systems	6	3

4– Teaching and learning methods

Lectures -4.1

Working on hand in assignments -4.2

Project and report knowledge collection -4.3

5- Student assessment methods

5.1 Mid term written exam to assess understanding competencies

5.2 Programming Project to assess programming skills

5.3 Oral Exam to assess attendance and interesting.

5.4 Semester hand in assignments to assess understanding professionalism.

5.5 Final term written Exam to assess comprehension.

Assessment schedule

Assessment 1	Mid term	Week 4 and 7
Assessment 2	semester activities	Week 5 and 8
Assessment 3	Final Project/report	Week 13
Assessment 4	Final term written exam	Week 14

6- Weighting of assessments

Mid-Term Examination	20%
Semester Work (homework assignments + quizzes)	10%
Project	10%
Final-term written Examination	60%
Total	100%

Any formative only assessments

7- List of references

7.1- Course notes

Collected and prepared notes that cover the main topics in the course content

7.2- Essential books (text books)

Elementary text books under the title: *Principles of operations research with applications to managerial decisions*. H. M. Wagner

7.3- Recommended books :

7.4- Periodicals, Web sites, ... etc Non.

8- Facilities required for teaching and learning

Lecture: PC's - packages for ready made scientific programs. - Data Show, instrumentation, and packages.

Names of professors/lecturers contributing to the design and delivery of the course

i Dr. N Ramly

Course coordinator:

Head of Department: Mohamed A. Ramadan

Date: / /