Model No.12
Course Specifications: Industrial Operations Research

University: Benha University
Faculty: Faculty of Engineering at Shoubra
Department offering the program: Mechanical Engineering Department
Department offering the course: Mechanical Engineering Department

1- Course Data

Course Code: MDP462	**Course Title:** Industrial Operations Research
Specialization: production Mechanical Engineering department	**Course Type:** Elective **Study Year:** Fourth Year

Teaching Hours: Lecture: 3   Tutorial: 2   Practical: 0   Total: 5

2- Course Aim

For students undertaking this course, the aims are to:
1. Use quantitative methods and techniques for effective decisions–making;
2. Model formulation and applications that are used in solving business decision problems

3- Intended Learning Outcomes of Course (ILO's)

a. **Knowledge and Understanding Skills:** On completing this course, students will be able to demonstrate the knowledge and understanding of:
   a.1) The characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type. (A.5)
   a.2) Basics of decision-making problems in industrial engineering. (A.14)

b. **Intellectual Skills:** At the end of this course, the students will be able to:
   b.1) Select suitable decision making approach to for modeling and analyzing engineering problems. (B.1)
   b.2) Analyze results of numerical models and assess their limitations.(B.11)
   b.3) Analyze and solve the problems presented by industrial entities. (B.15)

c. **Practical and Professional Skills:** On completing this course, the students are expected to be able to:
   c.1) Apply knowledge of decision-making approaches to solve engineering problems. (C.7)
   c.2) Use Excel computer-based support tools for problem-solving and analysis of results. (C.14)

d. **General and Transferable Skills:** At the end of this course, the students will be able to:
   d.1) Communicate effectively.   (D.3)
   d.2) Demonstrate efficient capabilities of Excel.(D.4)

4- Course Contents

Week no.	Topics
1	Introduction to operations research
2	Optimization Models and Examples
3	Linear Programming Models
4	Graphical Solution
5	Simplex Algorithm
6	Sensitivity Analysis and Duality
7	Assignment problems
8	Transportation Models

5- Teaching and Learning Methods

5.1- Lectures
5.2- Class activity
5.3- Case study
5.4- Assignments / Homework

6- Teaching and Learning Methods of Disables

- Nothing

7- Student Assessment

a- Student Assessment Methods

1. Five assignments to assess knowledge and intellectual skills.
2. Two quiz to assess knowledge, intellectual and professional skills.
3. Mid-term exam   to assess   knowledge, intellectual, professional and general skills.
4. Final exam   to assess   knowledge, intellectual, professional and general skills.
5.

b- Assessment Schedule

NO.	Assessment	Week
1	Assignments	2, 4, 7, 10,13
2	Quizzes	6, 10
3	Mid-term exam	8
4	Final exam	15

c- Weighting of Assessments

Assessment	Weight (%)
Mid-Term Examination	20 %
Final-Term Examination	64%
Practical Examination	00 %
Semester work	16 %
Other types of assessment	00 %
Total	**100**

8- List of References

a- Course Notes
- The majority of information in class will be given through lecture, class discussions and handouts.

b- Recommended Books
- Taha, Hamdy, Operations Research, 8th edition, Macmillan Publishing Company, 2007.

Course Coordinator: Prof.Dr. Attia Gomaa

Head of Department: Prof. Dr. Osama Ezzat Abdelatif

Model No.11A
Course Specifications: Industrial Operations Research

University: Benha University
Faculty: Faculty of Engineering at Shoubra
Department offering the program: Mechanical Engineering Department
Department offering the course: Mechanical Engineering Department

no.	Topics	Week no.	Knowledge and Understanding Skills	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
Matrix of Knowledge and Skills of the Course					
1	Introduction to operations research	1	a1			
2	Optimization Models and Examples	2	a2			
3	Linear Programming Models	3,4		b1		d1
4	Graphical Solution	5		b1,b2		
5	Simplex Algorithm	6,7		b1,b2,b3	c2	
6	Sensitivity Analysis and Duality	9,10		b3	c1	d1
7	Assignment problems	11			c2	d2
8	Transportation Models	12,13			c2	d2

Course Coordinator: Prof.Dr. Attia Gomaa

Head of Department: Prof. Dr. Osama Ezzat Abdelatif

Matrix of Course Aims and ILO's

Course Title: Industrial Operations Research

Course Code: MDP462

Teaching Hours: Lecture: 3   Tutorial: 2   Total: 5

Major or minor element of program: Minor

Program on which the course is given: B.Sc. Mechanical production Engineering

Department offering the program: Mechanical Engineering Department

Academic year / level: 2014-2015 Fourth Year / First Semester

Date of specifications approval: 2014

Course aims	Basic Knowledge	Intellectual Skills	professional Skills	General Skills
1 Use quantitative methods and techniques for effective decisions–making;	a1,a2	b1,b2,b3		
2 Model formulation and applications that are used in solving business decision problems			c1,c2	d1,d2

Course Coordinator: Prof .Dr. Attia Gomaa

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