Faculty of Engineering at Shoubra

Model No.12
Course Specifications : Math 3A

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Mathematics and Physics Engineering Department

1- Course Data

Course Code : EMP281 Course Title : Mathematics 2A Study Year : Second Year
Specialization :
Teaching Hours:
Lecture : 3 Tutorial : 2 Practical : 0

Date of specifications approval: 20/6/2010

2- Course Aim

For students undertaking this course, the aims are to:

2.1- List the essential information about the probability, the random variables, and the distribution of discrete and continuous random variables.
2.2- Mention the topics of applied probability, reliability and statistics that are critical to engineers and managers.
2.3- Illustrate the essential information about Fourier series, Fourier transformation, Fourier integral and its application in solving the integral equation.
2.4- Illustrate the basic information about the Linear programming problem, its application, its solution and duality problem.
2.5- Give statistics, probability and linear programming methods in engineering and management decision making.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:
a.1) Recognize concepts and theories of mathematics and sciences, appropriate to the discipline. (a.1)
a.2) Describe methodologies of solving engineering problems. (a.5)

b- Intellectual Skills

At the end of this course, the students will be able to:
b.1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. (b.1)
b.2) Select appropriate solutions for engineering problems based on analytical thinking. (b.2)
b.3) Solve problems of fourier transformation, fourier integral and its application in solving the integral equation . (b.7)

c- Professional Skills

On completing this course, the students are expected to be able to:

c.1) Apply knowledge of linear programming and probability problems and engineering practice to solve engineering problems. (c.1)
c.2) Apply numerical modeling methods to the probability and the random variables. (c.7)

d- General Skills

At the end of this course, the students will be able to:
d.1) Collaborate effectively y within multidisciplinary team
d.2) Lead and motivate individuals (d.5)

4- Course Contents

No	Topics
1	Fourier Series, Fourier Integral
2	Linear programing
3	Probability and statistics: random variables, density function, gauss distribution , Poisson distribution
4	Special functions: Gamma and Beta Functions, Legender's polynomial – Bessel's function. Differential equations

5- Teaching and Learning Methods

5.1- Modified Lectures

5.2- Lectures
5.3- Tutorials
5.4- Class activity

6- Teaching and Learning Methods of Disables

None

7- Student Assessment

a- Student Assessment Methods

1	Assignment to assess a1,a5 - b1,b2,b7 - c1,c7 - d1,d5
2	Mid-term exam to assess a1,a5 - b1,b2,b7
3	Quiz to assess a1,a5 - b1,b2,b7
4	Final exam to assess a1,a5 - b1,b2,b7 - c1

b- Assessment Schedule

No.	Assessment	Week
1	Assignment	All
2	Mid-term exam	8
3	Quiz	
4	Final exam	15

c- Weighting of Assessments

Assessment	Weight
Final term examination	64 %
Mid term examination	20%

Semester work	16%
Practical examination	0 %
Semester work	4%
Other type of assessment	16%
Total	100

8- List of References

a- Course Notes

1- Lecture material and training sheets

b- Books

1- W.WBekk, “Special Functions for Scientists and Engineers”, D. Van Nostrand Company (Canada), Ltd, (1968).

c- Recommended Books

1- Advanced Engineering Mathematics for Engineering and Scientists by Murray R.Spigal.

d- Web Sites

1- www.MathematicsResearch.com

Course coordinator: Dr. KhaledMamdouh Ibrahim Elnajjar Mohammed Elnajjar

Course instructor: Dr. KhaledMamdouh Ibrahim Elnajjar Mohammed Elnajjar

Head of department: Prof. Dr. Sayed A. Ward

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Matrix of Knowledge and Skills of the course

No.	Topics	Week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Fourier Series, Fourier Integral	1,2,3,4	a1	b1	c7	
2	Linear programing	5,6		b2		d1
3	Probability and statistics: random variables, density function, gauss distribution , Poisson distribution	7:12		b7	c1	d5
4	Special functions: Gamma and Beta Functions, Legender's polynomial – Bessel's function. Differential equations	13-14	a5	b1		

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