



Course Specifications: Engineering Mathematics 5

Benha University

Faculty of Engineering at Shoubra

Department offering the program: Communications

Department offering the course: Communications

1- Course Data

Course Code: Code: EMP 301

Course Title: Engineering Mathematics 5

Course Type : Compulsory

Level : 2

Teaching Hours : 4

Lecture : 2

Tutorial : 2

Practical : 0

2- Course Aims

- 2.1 Provide the students the principals of probability and statistics and their applications.
- 2.2 Teach the students data analysis.
- 2.3 Teach the students the concepts of quality control.

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

On completing this course, students will be able to:

a- Knowledge and Understanding

- a.1 Define the statistical measures.
- a.2 State the sample space of events.
- a.3 Describe the probability density function and the probability function.
- a.4 Explain the quality control.

b- Intellectual Skills

- b.1 Analyze the data.
- b.2 Determine the random variable.
- b.3 Verify the conditions of the probability density function and the probability function.

c- Professional and Practical Skills

- c.1 Apply the statistical measures for treating real problems in the light of available data.
- c.2 Collocate the data.
- c.3 Compute the probability of events.
- c.4 Find the curves that fit discrete data.

**d- General and Transferable Skills**

- d.1 Communicate effectively.
- d.2 Use information technology for obtaining information.
- d.3 Work in a group and lead a team.
- d.4 Manage time effectively and conduct self learning.

4- Course contribution in the program ILO's

Course ILO's	Program ILO's
Knowledge and understanding	A1, A5
Intellectual skills	B1
Professional and practical skills	C5
General and transferable skills	D1, D8

5- Contents

Week	Topic	No. of Hours	
		Lecture	Tutorials
1	Introduction Data analysis.	2	2
2	Statistical measures, Arithmetic mean, Geometric mean, Mean deviation, Variance, Standard deviation.	2	2
3	Curve fitting, Linear regression, Non linear regression.	2	2
4	Covariance, Correlation Coefficient.	2	2
5	Independent and dependent events, Conditional probability, Bayes theorem.	2	2
6	Random variable, Probability density function of one variable, Probability function, Expectation, Variance, Standard deviation.	2	2
7	Mid-Term Exam 1	1	
8	Moments, Moment generating function.	2	2
9	Probability density function of two variables (discrete, continuous).	2	2
10	Mean, Variance, Standard deviation, Covariance, Correlation Coefficient.	2	2
11	Mid-Term Exam 2	1	
12	Discrete probability distributions: Binomial, Poisson.	2	2
13	Continuous probability distributions: Normal, Gamma, Beta.	2	2
14	Quality control.	2	2
15	Final Exam	2	



6- Teaching and Learning Methods

- 5.1 Lectures
- 5.2 Tutorials

7- Student Assessment

a- Student Assessment Methods

- Assignments to assess knowledge and general skills.
- Midterm exams to assess knowledge, intellectual and professional skills.
- Final exam to assess knowledge, intellectual and professional skills.

b- Assessment Schedule

Methods of Assessment	Grading / Marks	Weighting %	Outline Details
Assignments	10	10 %	Week: All
Mid-Term Exam 1	30	30 %	Week: 7 1 hour
Mid-Term Exam 2	20	20 %	Week: 11 1 hour
Final Exam	40	40 %	Week : 15 2 hours

8- List of References

Course Notes	Lectures Notes (PDF)
Required Books	“Numerical Methods For Engineers and Scientists”, Calculus, 2 th Edition, J.D. Hoffman, Mc Graw Hill, Inc. New York, 1992.
Recommended Books	“Advanced Engineering Mathematics”, E. Kreyszig, John Wiley and Sons, New York, 1999.
Periodicals, web sites	www.intmath.com www.academicpress.com

Course Coordinator : Dr. Mohamed Eid

Head of Department :

**Matrix of The Course Contents and ILO's**

Course Code: Code: EMP 301 Course Title: Engineering Mathematics 5
 Course Type : Compulsory Level : 2
 Teaching Hours : 4 Lecture : 2 Tutorial : 2 Practical : 0

No	Topics	Weeks	Knowledge and Understanding	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
1	Data analysis.	2		b.1	c.2	d.1, d.2 d.3, d.4
2	Statistical measures.	1	a.1, a.2	b.3	c.1	d.1, d.2 d.3, d.4
3	Curve fitting and regression.	1			c.4	
4	Random variable and probability function.	3	a.3	b.2, b.3	c.3	
5	Discrete probability distributions.	2	a.1, a.2	b.1	c.3	
6	Continuous probability distributions.	2	a.1, a.2	b.3	c.3	
7	Quality control.	1	a.4			

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**Matrix of The Course Aims and ILO's**

Course Code: Code: EMP 301 Course Title: Engineering Mathematics 5
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 Teaching Hours : 4 Lecture : 2 Tutorial : 2 Practical : 0
 Date of specifications approval: 2018

No	Aims	Weeks	Knowledge and Understanding	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
2.1	Provide the students the principals of probability and statistics and their applications.	9	a.1, a.2, a.3	b.2, b.3	c.1, c.3, c.4	d.1, d.2 d.3, d.4
2.2	Teach the students data analysis.	2		b.1	c.2	d.1, d.2 d.3, d.4
2.3	Teach the students the concepts of quality control.	1	a.4			

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