Course Specifications (2011 - 2012)

A. Basic Information

Course Title	Mathematics & Statistics				Course Code:	EMP 151	
Lecture:	2	Tutorial:	2	Practical	0	Total	4
Programme (s) on which this course is given:				B.Sc. Civil Engineering (General)			
Major or minor element of program:			Major				
Department offering the program:			Civil Engineering				
Department offering the course:			Engineering Mathematics Physics				
Academic Year of program:	First			Level of program:		Second Semester	
Date of specifications approval:				16/3/2010			

B. Professional Information

1. Overall aims of course

By the end of the course the students will be able to:

• Recognize the essential information as introduction about Advanced Calculus and their applications in Engineering.
• Recognize the basic concepts of convergence and divergence of Infinite Series.
• Recognize the basic concepts of Functions of Several Variables.
• Deal with some applications and optimization problems.
• Interpret the methods of solution of Ordinary Differential Equations.
• Recognize the fundamental concepts of Vector Functions and vectors analysis.
• Recognize the fundamental concepts of Multiple Integrals and its applications.
• Recognize the basic concepts of Probability theory.
• Recognize the technology of using all the above items

2. Intended Learning outcomes of Course (ILOs)

a. Knowledge and Understanding:

a.1) Recognize concepts and theories of mathematics and sciences, appropriate to the discipline.
a.5) Recognize methodologies of solving engineering problems, data collection interpretation.

b. Intellectual Skills

b.1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.
b.2) Select appropriate solutions for engineering problems based on analytical thinking.
b.7) Solve engineering problems, often on the basis of limited and possibly contradicting information.

c. Professional and Practical Skills

c.1) Apply knowledge of mathematics, science, information technology, design, business context and engineering
c.7) Apply numerical modeling methods to engineering problems.

d. General and Transferable Skills

d.1) Collaborate effectively within multidisciplinary team.
d.5) Lead and motivate individuals.

3. Contents

Week #	Topics	No. of Hours	ILOS	Teaching / learning methods and	Assessment method
1	**Infinite series**	2	a1	**Lectures**	
				Class activity	
			c1		
2	**Infinite series, Functions of several variables**	2	a1,a5	**Lectures**	
			b7	**Class activity**	
			c1,c7		
			d5		
3	**Functions of several variables**	2	a5	**Lectures**	**Assignments**
			b7	**Class activity**	
			c7		
			d5		
4	**Functions of several variables, First order ordinary differential equations**	2	a1,a5	**Lectures**	
			b2,b7	**Class activity**	
			c7		
			d5		
5	**First order ordinary differential equations**	2	a1	**Lectures**	**Assignments**
			b2	**Class activity**	
6	**First order ordinary differential equations,Higher order differential equations**	2	a1	**Lectures**	
			b2	**Class activity**	
7	**Higher order differential equations**	2	a1	**Lectures**	**Assignments**
			b2	**Class activity**	
8	Midterm Exam	1			

9	**Higher order differential equations, Vectors analysis**	2	a1	**Lectures**	**Assignments**
			b1,b2	**Class activity**	
			c7		
10	**Vectors analysis**	2		**Lectures**	
			b1	**Class activity**	
			c7		
11	**Probability theory, random variables, continuous and discrete distributions**	2	a1	**Lectures**	**Assignments**
			b1	**Class activity**	
			d5		
12	**Probability theory, random variables, continuous and discrete distributions**	2	a1	**Lectures**	
			b1	**Class activity**	
			d5		
13	**Probability theory, random variables, continuous and discrete distributions**	2	a1	**Lectures**	
			b1	**Class activity**	
			d5		
14	**Probability theory, random variables, continuous and discrete distributions**	2	a1	**Lectures**	
			b1	**Class activity**	
			d5		
15	Final Exam	3			
Total		**30**			

4- Teaching and Learning Methods:
Check using the symbol √

√	Lectures
	Practical training / laboratory
	Seminar / workshop
√	Class activity
	Case study
	Project work
	Tutorial
	Computer based work
	Other :

5- Student Assessment Methods:

Check using the symbol √

√	Assignments	to assess	a1,a5	b1,b2,b7	c1,c7	d5
	Quiz	to assess				
√	Mid-term exam	to assess				
	Oral exam	to assess				
√	Final exam	to assess				
	Design Project	to assess				
	Report	to assess				
	Experimental write up	to assess				
	Informally assessment	to assess				
	Other	to assess				

6. Assessment schedule

Assessment 1 Assignments on weeks	3,5,7,9,11
Assessment 2 Quizzes on weeks	
Assessment 3 Mid-term exam on week	8
Assessment 4 Oral Exam on week	
Assessment 5 Final exam on week	15
Assessment 6 Design Project on weeks	
Assessment 7 Report on weeks	
Assessment 8 Experimental write up on weeks	
Assessment 9 Informally assessment	

7. Weighting of Assessments

Assignments	10%
Quiz	

Mid-term exam	20%
Oral exam	
Final exam	70%
Design Project	
Report	
Experimental write up	
Informally assessment	
Other	
Total	100%

8. List of References

8.1 Course Notes

• Lecture material and training sheets

8.2 Essential Books (Text Books)

• Engineering Mathematics Fifth Edition, K. A. Stroud, Industrial Press. Inc., New

8.3 Recommended Books

• Advanced Engineering Mathematics, E. Kreyszig, John Wiley and Sons, New

8.4 Periodicals Web sites, etc

• www.MathematicsResearch.com
• www.Google.com

9. Facilities Required for Teaching and learning

White board, prepared notes, Sheets and solving problems.

Course Coordinator:	Dr. Ibrahim Ahmed AlBastawisi Sakr	Dr. Khalid Mamdouh Ibrahim AlNaggar Mohamed AlNaggar

Course instructor:	Dr. Ibrahim Ahmed AlBastawisi Sakr	Dr. Khalid Mamdouh Ibrahim AlNaggar Mohamed AlNaggar
Head of department:	Associate Prof. Ahmed Mohamed Abdullah Hayawar	

Signature:

	D	M	Y
Date:	4	12	2011