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جامعة فلسطين التقنية – خضوري
دائرة الجودة والنوعية
طولكرم- ص.ب 7
هاتف: 09/2677923- 09/2671026
فاكس: 09/2677922
بريد إلكتروني: quality@ptuk.edu.ps

Course Specification Template

1. General information about Instructor:

Name	Basheer Saleh Mohammad Abdallah			Class Time & Office Hours				
Phone	Internal		Day	SUN	MON	TUE	WED	THU
	External							
Mobile			Class Time	1-2		1-2		1-2
Coordinator's name's E-mail	Dr.BasheerAbdallah		Class Room	E225		E225		E225
			Office Hours	12-1		12-1		12-1

2. General information about the Course

No	Requirements		
1	Course Title	**Engineering Mathematics 2**	
2	Course code & Number	**15010230**	
3	Credit hours	Theo. (CH): 3 hours	Practical (CH):
4	Faculty	**Science and Arts**	
5	Department / Division that offers the course:	**Mathematics**	
6	Course type	Compulsory	Elective
		Uni. ☐ Fac. ☐ Dep. ■	Uni. ☐ Fac. ☐ Dep. ☐
7	Level and Semester	Third	
8	Prerequisite(s) – If any	Calculus II	
9	Co-requisite(s) – if any		
10	Program/programs for it/them the course is offered	Mathematics	
11	Instruction Medium:	English ■	Arabic ☐

3. Course description:

Complex Numbers and Higher order of linear Equation , Series Solutions Of Second Order Linear Equations, The Laplace Transform, Systems of First Order Linear Equations, Trigonometric Fourier Series.

4. General Course Objectives

5.	**On successful completion of this course the student will be able to achieve the following objectives:** * Write complex numbers in polar coordinates * Solve the linear ordinary differential equation of higher order *Define the ordinary point and regular point with its types *Solve the second order ordinary differential equation by using the series *Define the Laplace Transform with its properties * Solve ordinary differential equation by using the Laplace *Define systems of first order equations *Solve systems of first order equations *Define the periodic function and the fourier series * compute Fourier coefficients and construct Fourier series

Intended Learning Outcomes/ILO's (please specify the learning outcomes of the course as outlined below):

* Solve the linear ordinary differential equation of higher order by using undetermined coefficient *Solve the second order ordinary differential equation by using the series * Use Laplace transforms to solve the heat and wave equations *Solve systems of first order equations with applications * Compute Fourier coefficients and construct Fourier series

6. Topics covered and Calendar:
A. Theoretical parts (Please state the titles of the subjects you intend to cover each week)

Number	Topics	Number of hours
1.	**Complex Numbers and Higher order of line Equation.** 1.1 The complex number and plane 1.2 Euler's formula for complex number, product ,and quotien 1.3 De Mover's theorem and roots of complex numbers. 1.4 General theory of nth order linear equation	3 Weeks

	1.5 Homogeneous equations with constant coefficients. 1.6 The method of undetermined coefficients. 1.7 The method of variation of parameters	
2.	**Series Solutions Of Second Order Linear Equations** 2.1 Review of power Series. 2.2 Series Solution near an Ordinary point, part I 2.3 Series Solution near an Ordinary point, part II 2.4 Regular Singular point. 2.5 Euler Equation. 2.6 Series Solution near a regular singular point, part I	3 week
3.	**The Laplace Transform** 3.1 Definition of Laplace transform. 3.2 Solution of initial Value Problems. 3.3 Step Functions. 3.4 Differential Equation with discontinuous forcing function. 3.5 Impulse functions. 3.6 The convolution integral.	3 week
4.	**Systems of First Order Linear Equations.** 7.1 Introducton . 7.4 Basic Theory of Systems of First Order Linear Equations 7.5 Homogeneous Linear Systems with Constant Coefficients 7.6 Complex Eigenvalues 7.8 Repeated Eigenvalues 7.9 Nonhomogeneous Linear Systems	3-4 week
5.	**Trigonometric Fourier Series.** 5.1 Periodic functions. 5.2 Fourier series of Functions of period 2π and Fourier series Functions defined on an interval of length 2π. 5.3 Even and odd functions, cosine and sine series 5.4 Functions of period $2l$.	3 weeks
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

14.		
15.		

B. Practical part (Please state the titles of the experiments you intend to cover each week)

Number	Experiment	Number of weeks
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

7. Student assessment methods based on ILO,s

No	Assessment method	Week	Mark	Percentage to overall mark
1.	First Exam		30%	
2.	Second Exam		30%	
3.	Mid-term Exam (if any)			
4.	Coursework			
5.	Final Exam		40%	

8. References and other resources

A. Recommended Textbook(s): two maximum
   Advanced Engineering Mathematics, by Erwin Kreyszing,9ᵗʰedition.

B. Other references
   1. Elementary Differential Equation and Boundary Value problems, by William E. Boyce
                                                              Richard C. Dipri

   2.Fourier Series, by Geogrip ,Tolstov

C. Electronic resources, Websites related to the course
   1.
   2.

Name & signature of Head of department/ program leader

   Name: …………………………… signature: …………………………Date: ………………

Name & signature of Quality rep. in your faculty

   Name: …………………………… signature: …………………………Date: ………………

Course coordinator's name and signature

   Name: Dr. Basheer Saleh Abdallah……… signature: ………………Date: 15/1/2017……