University / Academy : Menoufiya University

Collge / Institute : Faculty of Electronic Engineering

Department : Physics and Engineering Mathematics

Course Specification

١- Course ba9 ٢-]sic information		
Course Code: PM ١٠١	**Course Title:** Engineering Mathematics (٣)	**Academic year:** ٢٠١٢-٢٠١3 **Level (1) – Semester :** 1
Department requirement **Faculty requirement** **University requirement**	**Teaching hours: Lecture [٤]** **Tutorial [٢]**	

2- Aim of the course	١) Understand the classification of differential equations. ٢) Understand the methods to solve the differential equations. ٣) Understand using matrices to solve systems of linear differential equations. ٤) Understand Laplace transformations
3- Intended Learning Outcomes:	
A- Knowledge and Understanding:	The graduates of electronic engineering program should demonstrate knowledge and understanding of: a١) Concepts and theories of mathematics and sciences, appropriate to the discipline. a٣) Characteristics of engineering materials related to the discipline. a٥) Methodologies of solving engineering problems, data collection and interpretation a٨) Current engineering technologies as related to disciplines. a١٠) Technical language and report writing a١١) Professional ethics and impacts of engineering solutions on society and environment a١٢) Contemporary engineering topics.

B- Intellectual Skills	The graduates of electronic engineering program should be able to: b١) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. b٢) Select appropriate solutions for engineering problems based on analytical thinking. b٤) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources. b٥) Assess and evaluate the characteristics and performance of components, systems and processes. b٧) Solve engineering problems, often on the basis of limited and possibly contradicting information. b٨) Select and appraise appropriate ICT tools to a variety of engineering problems. b١١) Analyze results of numerical models and assess their limitations. b١٢) Create systematic and methodic approaches when dealing with new and advancing technology.
C- Professional Skills	The graduates of electronic engineering program should be able to: c١) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. c٤) Practice the neatness and aesthetics in design and approach. c٧) Apply numerical modeling methods to engineering problems. c١٢) Prepare and present technical reports.
D- General Skills	The graduates of the engineering programs should be able to: d١) Collaborate effectively within multidisciplinary team. d٣) Communicate effectively. d٤) Demonstrate efficient IT capabilities. d٦) Effectively manage tasks, time, and resources. d٧) Search for information and engage in life-long self-learning discipline. d٩) Refer to relevant literatures.

4- Course Contents	Ordinary first order differential equations- second and higher order linear differential equations – solving a system of differential equations – Laplace transform – power series solution for differential equations- applications.
5- Teaching and Learning Methods	• Lectures • Exercises and tutorials. • Research assignments
6- Teaching and Learning Methods for disable students	**NA**
7- Student Assessment	
a - Assessment Methods	-Reports, assignments, exercises, and final written exam to assess knowledge and understanding. -Regular oral and written quizzes to assess intellectual skills. -Oral exams to assess professional skills. -Reports, assignments, and discussions to assess general and transferable skills.
b- Assessment Schedule	Assessment ١ ٥th week. Assessment ٢ ١٠th week. Assessment ٣ (Oral) ١٤th week
c- Weighting of Assessment	Mid-term examination ١٥٪ Final-term examination ٧٠٪ Oral examination. ٠ Practical examination ٠ Semester work ١٠٪ Other types of assessment ٥% Total ١٠٠٪
8- List of text books and references:	
a- Course notes	There are lectures notes on engineering mathematical prepared in the form of a book authorized by the department.
b- Text books	[١] Ordinary Differential Equations and Their Solutions George M. Murphy
c- Recommended books	None
d- Periodicals, Web sites ……etc	Web Sites related to engineering mathematical.

- **Course contents - ILOs Matrix**

Content Topics	Week	**A- Knowledge & Understanding**	**B- Intellectual skills**	**C- Professional and practical skills**	**D- General and transferable skills**
Ordinary first order differential equations-	١,٢	a١,a٣	b١, b٢	c١	d١
second and higher order linear differential equations	٣,٤,٥	a١,a٥	b١, b٤, b٥	c١,c١٢	d١,d٤,d٦
solving a system of differential equations	٦,٧	a١,a٣, a٥	b١, b٤, b٥	c١,c١٢	d١,d٤,d٦
Laplace transform	٨,٩,١٠	a١,a٣, a٥	b١, b٤, b٥	c١,c١٢	d١,d٤,d٦
power series solution for differential equations-	١١,١٢	a١,a٣, a٥	b١, b٧, b٨,b١١	c٤,c٧	d١,d٤,d٦
applications.	١٣,١٤	a٨, a١٠,a١١,a١٢	b١٢		d٧,d٩

- **Course coordinator:** **Head of Department:**

Prof. Dr. Emil Shokralla . **Prof. Dr . Magdi Kamel**
Prof. Dr. Magdi Kamel
Dr. Wedad Ali

Date: / /