

COURSE CLASSIFICATION FORM

Course Number/Name		MATH 321 Differential Equations	
Prepared by		Dr. Salah A. Khafagy	
Program Learning Outcomes	Levels* (0,1,2, 3,4,5)	Relevant Activities	Assessment Methods/Metrics
a1. Apply fundamentals and concepts of mathematics.	5	- Lectures - assignments - Home works	• 3 Quizzes and final exam
a2. Apply fundamentals and concepts General sciences and Computer skills.	2	- Solving a first order DE using mathematica	• Home works
a3. Realize Social and ethical values.	5	- Opening statements at the beginning of the lecture	The behavior of the students
b1. Read and construct mathematical arguments and proofs.	4	- Lectures - assignments	Home works
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.	5	- Lectures - assignments - Oral discussion	• 3 Midterm and final exam+ Home work
c1. Work independently and within a team	3	Divided students into groups and using oral discussion with homework	• Home work
c2. Bear responsibility for different situations.	2		• Quizzes
c3. Realize codes of ethics and their importance.	4	- Opening statements at the beginning of the lecture	The behavior of the students
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.	4	- Lectures - assignments - Oral discussion	• 3 Midterm + final exam • Home work • Quizzes
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.	4	- Lectures - assignments	• Home work • Quizzes
d3. Critically interpret numerical and graphical data.	3	- assignments on information data and represented data	• Home work • Quizzes
e1. Use computer and its applications as an office tool	3	- assignments on Logical expression	Home work Quizzes

* Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.

Course Objectives and Outcomes

Course Number: MATH 321

Course Name: Differential Equations

Prepared by: Dr. Salah Khafagy

Table 1: Relationship of course objectives/outcomes with PLO and ASIIN Criteria

Course Objectives:	Course Outcomes:	ASIIN	PLO
Have the knowledge of the order, degree and classification of the differential equations (DE).	Define and recognize order, degree of DE.	a, b, e	
	Improve and outline kinds of DE.	b, c,m	
	Illustrate how to communicating with: Peers, Lecturers and Community.	l, n	
Have the knowledge of several methods using to solve the first order DE	Define and recognize separable variation, exact, homogenous and linear DE.	a, b, c, g, m, j	
	Shown the ability of working independently and with groups.	n	
	Illustrate how take up responsibility.	l, n	
Studying the second order DE with constant coefficients	Define and recognize the second order DE	a, b, f, h	
	ability to write physical phenomena with second-order differential equations	a, j, g,m	
Studying the second order DE with variable coefficients	Define and recognize DE of variable coefficients and solve them.	a, c, h,m	
	Appraise how to search in the library about DE materials.	d, h	
	Illustrate how to Search the internet and using software programs to solve DE.	d, h	
Have the knowledge of some useful methods using to solve DE	List some of these methods.	a, e, i	
	interpret how to use these methods to solve DE.	k, h, g,m	
Studying Laplace Transform and using it to solve DE.	Define and recognize the Laplace Transform and their properties.	a, i	
	interpret how to solve DE with Laplace Transform	h, k,m	
Using power series to solve differential equations.	Define and recognize the power series	a, i	
	interpret how to use power series to solve DE.	k, h, g,m	

Table 2: Methods of assessment of course syllabus

Assessment Method	Number/Type				Instructor Assessed	TA/Grader Assessed	Peer/Self Assessed
Homework	5 homework assignments				x		
Mid Terms/Final Exams	2 mid-term; 1 final exam				x		
Quizzes	One biweekly				x		
Individual Projects	1-2 wks	3-4 wks	1/2 sem	Full sem			
Team Projects	1-2 wks	3-4 wks x	1/2 sem	Full sem x	x		x
Lab Assignments							
Computer Assignments							
Computer Tools Used							
Oral Presentations	one				x		x
Written Reports	one				x		
Other	Design project (project binder)				x		

Outcome of ASIIN

a	Graduates have sound mathematical knowledge. They have a profound overview of the contents of fundamental mathematical disciplines and are able to identify their correlations.
b	Graduates are able to recognise mathematics-related problems, assess their solvability and solve them within a specified time frame.
c	Graduates have a basic ability to work in a scientific way. They are in particular able to formulate mathematical hypotheses and have an understanding of how such hypotheses can be verified or falsified using mathematical methods.
d	Graduates can flexibly apply mathematical methods of fundamental component areas of mathematics and are able to transfer the findings obtained to other component areas or applications.
e	Graduates have abstraction ability and are able to recognise analogies and basic patterns
f	Graduates are able to think in a conceptual, analytical and logical manner.
g	Graduates have an extensive comprehension of the significance of mathematical modelling. Are able to create mathematical models for mathematical problems as well as for problems in other areas of science or everyday life, and have a selection of problem solving strategies at their disposal.
h	Graduates can use basic methods of computer-aided simulation, mathematical software and programming to solve mathematical problems
i	Graduates are in a position to solve more extensive mathematical
j	Graduates can classify, recognise, formulate and solve mathematics-related problems
k	Graduates use electronic media competently
l	Graduates can implement lifelong learning strategies. A prerequisite for this is that the students are per-severing and that they have developed persistence.
m	Graduates can recognise, formulate, classify and solve problems in a mathematical context
n	Graduates can communicate, possibly also in a foreign language, and contribute their work effectively in teams

Instructor Course Evaluation Form

The purpose of this evaluation is to collect instructor feedback for improving this course and the Mathematics program. Information will also be used for program accreditation purposes.

I. Program Learning Outcomes Evaluations

Course Number/Name	Math 321 Differential Equations	Semester	Second 1434/1435					
Instructor	Dr. Salah A. khafagy							
The course listed above is designed for students to achieve the following outcomes at a Not At All, Low, Low- Medium, Medium, Medium-High or High level.								
Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.								
Program Learning Outcomes	Relevant Activities	5	4	3	2	1	0	
a1. Apply fundamentals and concepts of mathematics.	- Lectures - assignments	5						
a2. Apply fundamentals and concepts General sciences and Computer skills.	- assignments on logic statements		4					
a3. Realize Social and ethical values.	Opening statements at the lecture			3				
b1. Read and construct mathematical arguments and proofs.	- Lectures - assignments		4					
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.	- Lectures - assignments - Oral discussion	5						
c1. Work independently and within a team	Divided students into groups and using oral discussion with homework			3				
c2. Bear responsibility for different situations.	-				2			
c3. Realize codes of ethics and their importance.	Opening statements at the lecture			3				
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.	- Lectures - assignments - Oral discussion		4					
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.	- Lectures - assignments		4					
d3. Critically interpret numerical and graphical data.	- assignments on information data and represented data			3				
e1. Use computer and its applications as an office tool	- Activity in the home - Solve DE using Mathematica				2			

II. Catalog Description , and Course Prerequisites Evaluations:

Based on your experiences in the course, please respond by circling the most appropriate number. Circle N/A for items that are not applicable, or if you have no opinion.

Catalog Description 1434-1435	<ul style="list-style-type: none"> • Basic definitions and construction of an ordinary differential equation • Methods of Solving Ordinary differential equations of First Order. Orthogonal trajectories • Ordinary differential Equations of High Orders With constant coefficient and with variable coefficients. • Linear differential equations of higher order. • Laplace transform. • Laplace transform for some elementary functions. • Solving ordinary differential equation using Laplace transform. 						
Course Prerequisites:	Calculus II Math 2002	Circle One (5=Strongly Agree; 1=Strongly disagree)					
2a. Do you believe that the catalog description (above) is accurate for this course?	(5)	4	3	2	1	N/A	
2b. Do you believe that the course prerequisites (above) are appropriate for this course?	(5)	4	3	2	1	N/A	
2c. If not, please list any prerequisites you believe are not appropriate for this course.							

III. Textbook(s) and/or Lab Manuals (if applicable) Evaluations:

Textbook(s) and/or Lab Manuals (if applicable):	<ul style="list-style-type: none"> • Calculus with analytic Geometry. By Roland E. Larson, Bruce H. Edwards, Robert P. Hostetler • Kenneth H. Rosen: Discrete Mathematics and its application, Sixth Edition, Mc Graw Hill, 2006. 	Circle One (5=Strongly Agree; 1=Strongly Disagree)					
3a. In general, do you believe this to be an appropriate textbook for this course?	(5)	4	3	2	1	N/A	
3b. Was the organization of the textbook appropriate for this course?	5	(4)	3	2	1	N/A	
3c. Was the level of the textbook appropriate for this course?	5	(4)	3	2	1	N/A	

IV. Computer usage (if applicable) Evaluations:

Computer usage (if applicable):		Circle One (5=Strongly Agree; 1=Strongly Disagree)					
5a. Was the use of computer well integrated with the course?	5	4	3	(2)	1	N/A	
5b. Was the computer lab adequately equipped with well-maintained and updated computers?	5	4	3	2	1	(N/A)	
5c. Was the computer lab equipped with sufficient number of computers?	5	5	5	2	1	(N/A)	
5d. Were the special software packages (MATLAB, SPSS, C+, FORTRAN, etc) available and accessible?	5	4	3	2	1	(N/A)	
5e. Was adequate technical support available when needed?	5	4	3	2	1	(N/A)	

Student Course Evaluation Form

The purpose of this evaluation is to collect instructor feedback for improving this course and the Mathematics program. Information will also be used for program accreditation purposes.

I. Program Learning Outcomes Evaluations

Course Number/Name	MATH 321 Introduction to differential equations	Semester	Second
Instructor	Dr. Salah A. Khafagy		1434/1435
Student Name	-----	Student ID	-----
The course listed above is designed for students to achieve the following outcomes at a Not At All, Low, Low- Medium, Medium, Medium-High or High level.			
Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.			
Program Learning Outcomes		5	4
		3	2
		1	0
a1. Apply fundamentals and concepts of mathematics.			
a2. Apply fundamentals and concepts General sciences and Computer skills.			
a3. Realize Social and ethical values.			
b1. Read and construct mathematical arguments and proofs.			
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.			
c1. Work independently and within a team			
c2. Bear responsibility for different situations.			
c3. Realize codes of ethics and their importance.			
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.			
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.			
d3. Critically interpret numerical and graphical data.			
e1. Use computer and its applications as an office tool			

Instructor Course Evaluation Form

II. Catalog Description , and Course Prerequisites Evaluations:

Based on your experiences in the course, please respond by circling the most appropriate number. Circle N/A for items that are not applicable, or if you have no opinion.

Catalog Description 1434-1435	<ul style="list-style-type: none"> • Basic definitions and construction of an ordinary differential equation • Methods of Solving Ordinary differential equations of First Order. Orthogonal trajectories • Ordinary differential Equations of High Orders With constant coefficient and with variable coefficients. • Linear differential equations of higher order. • Laplace transform. • Laplace transform for some elementary functions. • Solving ordinary differential equation using Laplace transform. 					
Course Prerequisites:	MATH 202		Circle One (5=Strongly Agree; 1=Strongly disagree)			
2a. Do you believe that the catalog description (above) is accurate for this course?	5	4	3	2	1	N/A
2b. Do you believe that the course prerequisites (above) are appropriate for this course?	5	4	3	2	1	N/A
2c. If not, please list any prerequisites you believe are not appropriate for this course.						

III. Textbook(s) and/or Lab Manuals (if applicable) Evaluations:

Textbook(s) and/or Lab Manuals (if applicable):	<ul style="list-style-type: none"> • JAMES C. ROBINSON: An introduction to ordinary differential equations, Cambridge U. Press, 2004. • Eare A. Coddington : An introduction to ordinary differential equations . New Jersey , 1961. 		Circle One (5=Strongly Agree; 1=Strongly Disagree)			
3a. In general, do you believe this to be an appropriate textbook for this course?	5	4	3	2	1	N/A
3b. Was the organization of the textbook appropriate for this course?	5	4	3	2	1	N/A
3c. Was the level of the textbook appropriate for this course?	5	4	3	2	1	N/A

IV. Computer usage (if applicable) Evaluations:

Computer usage (if applicable):	Circle One (5=Strongly Agree; 1=Strongly Disagree)					
4a. Was the use of computer well integrated with the course?	5	5	5	2	1	N/A
4b. Was the computer lab adequately equipped with well-maintained and updated computers?	5	4	3	2	1	N/A
4c. Was the computer lab equipped with sufficient number of computers?	5	5	5	2	1	N/A
4d. Were the special software packages (MATLAB, SPSS, C+, FORTRAN, etc) available and accessible?	5	4	3	2	1	N/A
4e. Was adequate technical support available when needed?	5	4	3	2	1	N/A

Instructor Course Evaluation Form
