



ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)



هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution: Al Yamamah University	Date: March, 4, 2019
College/Department: Computer and Information Systems / Mathematics and Natural Sciences	

A. Course Identification and General Information

1. Course title and code: Differential Equations / MTH 302			
2. Credit hours: 4			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Software Engineering, Network Engineering, and Industrial Engineering			
4. Name of faculty member responsible for the course: Dr. Sadiqah			
5. Level/year at which this course is offered: Third Year			
6. Pre-requisites for this course (if any): Calculus II / MTH 211			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus: None			
9. Mode of Instruction (mark all that apply):			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			

Commented [a1]:



B Objectives

1. What is the main purpose for this course?

The main purpose of this course is to let the students understand the concepts of differential equations, to provide standard methods for solving first-order differential equations. Linear Models. Higher order differential equations. Series solutions of linear equations. Systems of linear first-order differential equation.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Increased use of LMS (Moodle based) for material delivery/receipt and discussion forums.
- Refer students to related web sites.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This three-credit hour course is designed to provide an Introduction to differential equations. First-order differential equations. Linear Models. Higher order differential equations. Homogeneous differential equations with constant coefficients. Undetermined coefficients-Annihilator Approach, reduction of order, variation of parameters, and Cauchy-Euler equation. Series solutions of linear equations. Systems of linear first-order differential equation.

1. Topics to be Covered

List of Topics	No. of weeks	Contact hours
- Definitions and Terminology - Initial Value Problems	1	4
- Separation of Variables - Linear Equations - Exact Equations - Solutions by substitution	3	12
- Linear Models: Growth and Decay, Newton's Law of cooling	.5	2
- Initial Value and Boundary Value Problems - Homogeneous Equations - Nonhomogeneous Equations - Reduction of Order - Homogeneous Linear Equations with Constant Coefficients - Undetermined Coefficients- Annihilator Approach - Variations of Parameters - Cauchy-Euler Equation	5	20
- Power Series - Solutions about Ordinary Points - Solutions about Singular Points	1.5	6



<ul style="list-style-type: none"> - Matrices and Linear Systems - Eigenvalue Problem - Preliminary Theory- Linear Systems - Homogenous Linear Systems - Distinct Real Eigenvalues - Repeated Eigenvalues - Complex Eigenvalues - Nonhomogeneous Linear Systems-Variations of Parameters 	4	16
Total	15	60

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planned	60	None	None	None	None	60
	Actual	60	None	None	None	None	60
Credit	Planned	4	None	None	None	None	4
	Actual	4	None	None	None	None	4

3. Additional private study/learning hours expected for students per week.

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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge After successful completion of the course students will be able to		
1.1	Recognize differential equations	Formal lectures Group discussion Exercises Classroom activities	Homework Quizzes Exams
1.2	Recognize different methods for solving first-order differential equations and higher order		
2.0	Cognitive Skills After successful completion of the course students will be able to		

2.1	Create the general solutions to first-order differential equations and higher order	Formal lectures Group discussion Exercises Classroom activities	Homework Quizzes Exams
2.2	Create the series solutions of linear second-order differential equations using power series		
2.3	Create the general solutions of systems of linear homogenous and nonhomogeneous differential equations using eigenvalues and eigenvectors		
3.0	Interpersonal Skills & Responsibility		
3.1	NA	NA	NA
4.0	Communication, Information Technology, Numerical After successful completion of the course students will be able to		
4.1	Calculate numerical problems related to: - Initial value and boundary value problems - Linear models: Growth & Decay, Newton's Law of cooling	Formal lectures Group discussion Exercises Classroom activities	Homework Quizzes Exams
5.0	Psychomotor		
5.1	NA	NA	NA

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)									
	1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	4.1	4.2
1.1	X	X	-	X	-	-	-	-	-	-
1.2	X	-	-	X	-	-	-	-	-	-
2.1	-	-	-	X	X	-	-	-	-	X
2.2	-	-	-	X	-	-	-	-	-	-
3.1	-	-	-	-	-	-	-	-	-	-
4.1	-	-	X	X	-	-	-	-	-	-

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First Quiz	4	8%
2	First Homework	8	8%
3	Midterm Exam	8	20%
4	Second Quiz	12	8%
6	Third Quiz / Project	14	8%
7	Second Homework	15	8%
8	Final Exam	16	40%





D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Faculty Members have around 10 office hours every week for student consultations.

E Learning Resources

- | |
|---|
| 1. List Required Textbooks
A first Course in Differential Equations by D.G.Zill, 10 th Edition |
| 2. List Essential References Materials (Journals, Reports, etc.)
NA |
| 3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
http://lms.alyamamah.edu.sa |
| 4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
NA |



F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classrooms
2. Technology resources (AV, data show, Smart Board, software, etc.) Data show
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) NA

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching At the end of the course, students receive feedback forms designed as per guidelines of NCAAA that are used to evaluate the effectiveness of teaching.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department Peer review visits are normally conducted among faculties wherever possible during academic year. During the lecture time Chair (Head)/ Dean of the department visits the classroom. At the end of each visit, faculties are usually set together to discuss related issues.
3. Processes for Improvement of Teaching - Feedbacks from students using different types of survey including Student Experience Survey (SES), Program Evaluation Survey (PES), and Alumni Survey (AS) are shown and discussed with faculty members to improve the teaching. - Specialized workshops and seminars are conducted throughout academic year to address specific teaching strategies and improvements.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) Peer review and discussion with course coordinator. There should be a strong liaison with teacher from some external university/institute in order to exchange ideas related to marking/ evaluating quizzes and assignments.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. At the end of each semester, Curriculum committee conducts a meeting with all faculty members in which surveys filled by the students and other feedbacks from faculty members are discussed. Effectiveness of the courses, mistakes done and weaknesses are discussed. These points are made basis for the planning for improvements for next semester/ year.

Name of Course Instructor: Dr. Sadiqah Al Marzooq

Signature: _____

Date Specification Completed: March 4, 2019

Program Coordinator: Dr. Sadiqah Al Marzooq

Signature: _____

Date Received: _____