TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmer specification.

1. Teaching Institution	Al-Ayen University
2. University Department/Centre	College of Petroleum Engineering
3. Course title/code	Mathematics II
4. Modes of Attendance offered	classes
5. Semester/Year	year
6. Number of hours tuition (total)	4
7. Date of production/revision of this specification	9/10/2023

Aims of the Course

1. Learn polar coordinates and the relationship of polar coordinates and regular coordinates and how to find the area and length of polar curves
2- The student can find the first and upper partial derivatives as well, the total differential
3- The student has the ability to transform a double integral into general coordinates.
4- The student can evaluate the triple integrals on general volumes
5. Learn to find vectors and how to perform vector arithmetic
6- The study of analytic geometry, where they present simple ways to describe lines, planes, surfaces, and curves in space.
7- Use this calculus to describe the trajectories and motions of objects moving in a plane or in space, and note that the velocities and accelerations of these objects along their paths are vectors.
8- Study of infinite series with many applications of mathematics.

10. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals

A1- Converting expressions from Cartesian coordinates to polar coordinates, and drawing graphs of polar curves, recognizing the equations of standard polar curves

A2- Understand the partial derivatives of the first and second orders of a function of two real variables

A3- Understand triple integrals on general volumes

A4- Understand the arithmetic operations of trends

A5 - Understand the order of an ordinary differential equation and determine whether the equation is linear or nonlinear.

A6- Understand a form of Taylor series from a series Maclaurin

B. The skills goals special to the course.

B1 - Asking questions

B2 - Solve examples and problems

B3 - The student will be able to construct special equations for polar events

B4 - The student will be able to create special series

Teaching and Learning Methods

1- Giving electronic lectures

2- Curriculum books approved and approved in the university calendar

3- Daily and monthly exams with homework

Assessment methods

1 - Daily exams representing 6%

2- Semester exam number 2 representing 30%

3- Attendance %2

4- Daily duties 2%

C. Affective and value goals

C1- The student shows a desire to know the fields of reflection of functions and how to create equations.

C 2 - The student seeks to apply different methods in the solution.

C3 - The student proposes a research topic in the direction of a particular problem.

C4- The student has a position in solving a specific problem in his field of mathematics

Teaching and Learning Methods

- Delivering electronic lectures and simultaneous e-learning with blended learning
- Discussions and scientific dialogues and ask questions

Assessment methods

1- Daily and class duties through discussion

2- Commitment to the specified times, whether lectures or handing in assignments

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development) D1 - Develop students' abilities to find solutions in the future D2 - Develop the student's abilities to open discussion D3 - Develop the student's abilities to be self-reliant in research issues
11. Course Structure

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4 3 the. 1 tut.	scientific knowledge	Introduction to polar coordinates	lecture + discussion	Exam and daily questions
2	4 3 the. 1 tut.	scientific knowledge	Polar curves Standard polar curves	lecture + discussion	Exam and daily questions
3	4 3 the. 1 tut.	scientific knowledge	Area of a plane figure bounded by a polar curve	lecture + discussion	Exam and daily questions
4	4 3 the. 1 tut.	scientific knowledge	Arc length of a polar curve	lecture + discussion	Exam and daily questions
5	4 3 the. 1 tut.	scientific knowledge	Find symmetry of polar equation	lecture + discussion	Exam and daily questions
6	4 3 the. 1 tut.	scientific knowledge	Volume of rotation of a polar curve Surface of rotation of a polar curve	lecture + discussion	Exam and daily questions
7	4 3 the. 1 tut.	scientific knowledge	Partial differentiation *First partial derivatives*	lecture + discussion	Exam and daily questions
8	4 3 the. 1 tut.	scientific knowledge	Implicit function	lecture + discussion	Exam and daily questions
9	4 3 the. 1 tut.	scientific knowledge	Change of variable	lecture + discussion	Exam and daily questions
10	4 3 the. 1 tut.	scientific knowledge	Double integral over rectangle area	lecture + discussion	Exam and daily questions
11	4	scientific	Triple integral	lecture +	Exam and

	3 the. 1 tut.	knowledge	over general area	discussion	daily questions
12	4 3 the. 1 tut.	scientific knowledge	first moment and centroid	lecture + discussion	Exam and daily questions
13	4 3 the. 1 tut	scientific knowledge	Introduction to Vectors And The Geometry Of Space	lecture + discussion	Exam and daily questions
14	4 3 the. 1 tut	scientific knowledge	Vector Algebra Operations	lecture + discussion	Exam and daily questions
15	4 3 the. 1 tut	scientific knowledge	Introduction to differential equations	lecture + discussion	Exam and daily questions
16	4 3 the. 1 tut	scientific knowledge	First-Order Differential Equations and Solutions	lecture + discussion	Exam and daily questions
17	4 3 the. 1 tut	scientific knowledge	Introduction &Representing Sequences and series Testing for Convergence and Divergence	lecture + discussion	Exam and daily questions
18	4 3 the. 1 tut	scientific knowledge	Introduction about the Taylor series and the Maclaurin series	lecture + discussion	Exam and daily questions

12.Infrastructure	
1. Books Required reading:	Thomas Calculus_ Early Transcendentals 13th Edition c2014
2. Main references (sources)	E. Kreyszing" Advanced Engineering Mathematics" Stroud K. A. " Advanced Engineering Mathematics "

A- Recommended books and references (scientific journals, reports…).	Thomas Calculus
B-Electronic references, Internet sites…	https://www.pearson.com/store/p/thomas-calculus-early-transcendentals/P100002390868/9780321884077
13.The development of the curriculum plan	Update the course periodically through continuous access to the most important scientific sources in the field of specialization and benefit from them.