ATTACHMENT 5.

T6. COURSE SPECIFICATIONS
(Calculus (1) – 119 Math)

Course Specifications

Institution: *King Khalid University*	Date of Report : *September 2019*
College/Department :Faculty of science, department of mathematics	

A. Course Identification and General Information

1. Course title and code: *Calculus (1) – 119 Math.*
2. Credit hours : 3
3. Program(s) in which the course is offered. Mathematics,physics   (If general elective available in many programs indicate this rather than list programs)   *Bachelor of Engineering*
4. Name of faculty member responsible for the course :   *Dr. Ahmed Waheed Elwan*
5. Level/year at which this course is offered : *1st level / 1st Academic Year*
6. Pre-requisites for this course (if any) : *None*
7. Co-requisites for this course (if any) : *None*
8. Location if not on main campus   *Academic Campus at Mahala*
9. Mode of Instruction (mark all that apply)

a. Traditional classroom   √   What percentage?   70 %

b. Blended (traditional and online)   √   What percentage?   15 %

c. e-learning   √   What percentage?   15 %

d. Correspondence   What percentage?

f. Other   What percentage?

Comments:

B Objectives

1. What is the main purpose for this course?

By the completion of this course the students will able to
1- Acquired knowledge, skills about the basis and theories of the basic fundamental of mathematics
2- Apply the basic fundamental of Differential Calculus in solving problems
3- Apply fundamental of Differential Calculus in application Calculus

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)

1- increasing student skills in IT
2- interact with the students through homepage
3- train students in small projects

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

Topics	Weeks	Contact hours
Equations, Inequalities, factorisation and quadratic formula and revision of some basic skills of mathematics.	*2*	*6*
Definition of functions, domain, range, symmetry, and graph of some kinds of functions, transformations, Addition, subtraction, multiplication, division and composition of function; and their domain.	*2*	*6*
Trigonometric functions and some properties and identities.	*1*	*3*
Definition of limits, techniques of finding limits and sandwich theorem.	*2*	*6*
Continuity, discontinuity and intermediate value theorem.	*1*	*3*
Definition of derivatives, basic rules of differentiation, techniques of derivatives, limits and derivatives of trigonometric functions, the chain rules, implicit differentiation and applications of derivation in finding the equation of tangent lines.	*3*	*9*
Rolle's theorem, mean value theorem, extremum, first and second derivative tests, asymptotes and graph of functions.	*3*	*9*
General review	*3*	*3*
Total	*14*	*42*

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**--**	**--**	**--**	**--**	**45**
Credit	**3**	**--**	**--**	**--**	**--**	**3**

3. Additional private study/learning hours expected for students per week.	2-4 hrs/wk

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

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The *National Qualification Framework* provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

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. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

		NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0		**Knowledge**		
1.1		Understand and know the scientific background of Differential Calculus	Lectures, problem solving, small project assignments.	In-class quizzes , In-class tests, coursework reports, homework assignments
1.2		Know the processes and methods of classifying the Differential equations	Lectures, problem solving, small project assignments.	Quizzes , In-class tests, coursework reports, homework assignments
1.3		Understand in depth the theoretical basis of Differential Calculus	Lectures, problem solving, small project assignments, Internet research work and independent study.	In-class quizzes , In-class tests, coursework reports, homework assignments
1.4		Demonstrate knowledge of different approaches that can be used for Differential Calculus.	Lectures, problem solving, small project assignments, Internet research work and independent study.	In-class quizzes , In-class tests, coursework reports, homework assignments
1.5		Familiar to quantities methods appropriate Differential Calculus	Lectures, problem solving, small project assignments, Internet research work and independent study.	In-class quizzes , In-class tests, coursework reports, Regular class MCQ's
1.6		Practical understanding of techniques and procedures used in the application of Differential Calculus	Lectures, problem solving, small project assignments, Internet research work and independent study.	In-class quizzes , In-class tests, coursework reports, Regular class MCQ's
2.0		**Cognitive Skills**		
2.1		Understand and know the scientific background of Differential Calculus	Through a range of lectures, tutorials, home assignment and exercises.	In-class quizzes , In-class tests, coursework reports, homework assignments
2.2		Understand in depth the theoretical basis of Differential Calculus	Through a range of lectures, tutorials, home assignment and exercises.	Quizzes , In-class tests, coursework reports, homework assignments
2.3		Demonstrate knowledge of different approaches that can be used for Differential Calculus	Through a range of lectures, tutorials, home assignment and exercises.	Quizzes , In-class tests, coursework reports, homework assignments
2.4		Familiar to quantities methods appropriate to Differential Calculus	Analysis and solution of scientific problems through small group discussion and class work	Quizzes , In-class tests, coursework reports, homework assignments
2.5		Practical understanding of techniques and procedures used in the application of Differential Calculus	Analysis and solution of scientific problems through small group discussion and class work	Quizzes , In-class tests, coursework reports, homework assignments

3.0	**Interpersonal Skills & Responsibility**		
3.1	Act in responsible ethical manners	Engage students in carrying out internet search	Oral examinations
3.2	Develop the necessary skills for self-managed and lifelong learning	Engage students in small projects	Observation of student's ethical and moral behavior
3.3	Act responsibly in personal and professional relationships	Engage students in small projects	Observation of student's ethical and moral behavior
3.4	Develop the necessary skills for self-managed and lifelong learning	Engage students in carrying out internet search	Oral examinations
3.5	Time management skills	Engage students in carrying out internet search	Oral examinations
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in English in both oral and written form	Teaching and learning in English	Discussions, Oral and written examinations all in English
4.2	Use IT and communication technology in gathering and interpreting information and ideas.	Application of simple computer programs to improve student IT skills	IT duties and presentations Discussions and written examinations
4.3	Acquiring skills in searching for scientific literature relevant to a specific topic	Student involvement in seminars, Internet search.	Seminars, discussions, Oral examinations, Part of the grades are given to good report and presentation
4.4	Recognize and respect the views and scientific opinions of others	Internet search.	Discussions, seminars and examinations Part of the grades are given to good report and presentation
5.0	**Psychomotor**		
5.1	Analysis data using appropriate mathematical techniques	Developed through the study skills for mathematical and numerical approaches	Practical professional skills are assessed through home works, coursework tasks exams
5.2	Use approaches and concepts of analysis in solving organization problems	Developed through engagement of students in analysis and evaluation of results and data	Practical professional skills are assessed through home works, coursework tasks exams
5.3	Demonstrate the necessary skills to work competently in professional situations	Developed through the study skills for mathematical and numerical approaches	Practical professional skills are assessed through home works, coursework tasks exams
5.4	Ability to carryout research work and writing professional reports	Developed through engagement of students in analysis and evaluation of	Practical professional skills are assessed through home works, coursework tasks

		results and data	exams

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	1.4	1.5	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4
1.1	√	√	√	√	√	√	√	√	√	√	√	√	√				√	√			
2.1	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√	√			
2.2	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√	√			
2.3	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√			
2.4	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3.1												√	√	√	√	√	√	√	√	√	√
4.1	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4.2	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4.3	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4.4	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First exam	7	15%
2	Second exam	10	15%
3	Final exam.	15	60%
4	homework	Each week	0.5%
5	group project		2.0%
6	speech, oral presentation		1.0%

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) Contact students during office hours academic advisement

E. Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.) Howard Anton, "CALCULUS EARLY TRANSCENDENTALS", John Wiley & Sons, Last Edition.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) • *Free Books > Science > Mathematics www.math.temple.edu/~cow/*   *www.mathramz.com/math/Diffrential equation.* • **http://www.educator.com** • http://tutorial.math.lamar.edu/terms.aspx
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

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.)

2. Computing resources (AV, data show, Smart Board, software, etc.) • increase internet points • Preparing E- courses
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Labs including visual lab

G. Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Student questionnaire Student Evaluations on education gate site
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor Annual review of course report Head of department reports
3 Processes for Improvement of Teaching Prepare power point presentations Prepare electronic course
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) Examination committee

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
    1- Prepare the lecture notes as a power point presentation.
    2- Use up-to-date visual aids in learning and teaching.

Faculty or Teaching Staff: *Dr. Ahmed Elwan*

Signature: **Date Report Completed:** *September 5, 2019*

Received by: _____

Signature: _____   **Date:**