هيئة تقويم التعليم
Education Evaluation Commission

المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

ATTACHMENT 5

T6. COURSE SPECIFICATIONS (CS)

Course Code: 108MATH
Course name: Calculus 1

Course Specifications

Institution: **King Khalid University, Abha**	Date: **01/02/2018**
College/Department : **College of Science / Department of Mathematics**	

A. Course Identification and General Information

1. Course title and code: **108MATH: Calculus 1**
2. Credit hours: **3 (3 + 0)**
3. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

- **Bachelor in Information Systems**
- **Bachelor in Computer Science**
- **Bachelor in Computer Engineering**

4. Name of faculty member responsible for the course

Mohammad Hazzazi (coordinator)

Fouad Al Mahdi , Ahmad Alwan, Khalid Jodah

5. Level/year at which this course is offered: 1st Level / 1st Year
6. Pre-requisites for this course (if any): NA
7. Co-requisites for this course (if any): NA
8. Location if not on main campus: **Main Campus**
9. Mode of Instruction (mark all that apply):

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

The Blackboard LMS will be used for quizzes, lecture notes, announcements, etc.

B Objectives

1. What is the main purpose for this course?

The main purpose of this course is to introduce basic tools of calculus. The course will introduce students to:

1) Real numbers, mathematical functions, equations, and inequalities.
2) The basic concept of limit and continuity of a function.
3) Trigonometric, logarithmic, exponential, and hyperbolic functions.
4) Polar coordinate and complex numbers.

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) Encouraging students to read by themselves from different sources.
2) Assigning students to do lots of homework assignments.
3) Using E-learning.

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

This course gives students a background of mathematics needed to build the mathematical maturity and sophistication needed by science and IT students in particular. The course begins with the study of real numbers, Equations and Inequalities, functions, the basic tools of calculus, their algebra and families of functions, the basic concept and the limit of a function, and the continuity of a function. Then it introduces some special functions as the trigonometric, logarithmic, exponential, and hyperbolic functions. Finally, the course covers polar coordinate and complex numbers.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Introduction: Review on roots, fractures, analysis and numbers, Intervals on R, definition of the absolute value and its properties, Equations and Inequalities.	2	6
Functions: Domain and range and function operations, Inverse function, Composite function, Even and odd Functions, Periodic functions, Basic functions and how to sketch them, exponential and logarithms functions, Trigonometric functions, and Hyperbolic Functions.	4	12
Limits: Definition of limit of a function, Right and left limit, Properties of limits, Limit of trigonometric functions, Limits containing infinity, L'Hospital's Rule.	4	12
Continuity: Continuity of function at point, Properties of the continuity, Discontinuity. Right and left side continuity.	2	6
Complex numbers: Cartesian complex numbers, The Argand diagram, arithmetic operations for complex numbers, complex plane, Euler formula, Complex equations, The polar form of a complex number, Applications of complex numbers, De Moivre formula for multiplication and division.	2	6
General Review	1	3

2. Course components (total contact hours and credits per semester):							
		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	45	0	0	0	0	45
	Actual	45	0	0	0	0	45
Credit	Planed	3	0	0	0	0	3
	Actual	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week. 2 hours per week to review and do homework and for self-study.	2

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy			
Code #	**NQF Learning Domains And Course Learning Outcomes**	**Course Teaching Strategies**	**Course Assessment Methods**
1.0	**Knowledge**		
1.1	Describe function's limit and continuity and some basic theorems for that.	Lectures, group work	Quizzes and Homework
2.0	**Cognitive Skills**		
2.1	Solve mathematical problems related to limits, linear, quadratic, exponential, logarithmic, and trigonometric functions.	Lectures, Homework, group discussion, brain storming	Quizzes, exam
3.0	**Interpersonal Skills & Responsibility**		
3.1	Discuss scientific issues through open questions	- Group discussion - Collaborative work	Class activity
3.2	Demonstrate self-reliance on solving problems		
4.0	**Communication, Information Technology, Numerical**		
4.1	Demonstrate using E-learning tools in education and to communicate orally	Discussion and presentation	Class activity
5.0	**Psychomotor**		
5.1	N/A		

6. 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	Homework	Weekly Or Biweekly	10%
2	Quizzes		10%
3	First Mid Term	Week 6 or 7	15%
4	Second Mid Term	Week 11 or 12	15%
5	Final Exam	After Week 14	50%

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) ▪ Instructors should provide at least 2 office hours per week for each section for the purpose of student support, consultations and academic advice. ▪ Average office hours during the semester should be 28 hours. ▪ Instructor should use blackboard to provide all class notes the students need

E Learning Resources

1. List Required Textbooks H. Anton, I. C. Bivens, S. Davis, Calculus, 11th Edition, Willey, 2016. ISBN: 978-1118886137.
2. List Essential References Materials (Journals, Reports, etc.) • E W Swokowski, Calculus, 5th edition, Cengage Learning, 2000. ISBN-13: 978-0534435387 • R K Ghosh, K C Maity, An Introduction to Analysis: Differential Calculus: Part I, 13th edition, New Central Book Agency, 2011.
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc. • http://www.mhhe.com/math/calc/smithminton/ • https://lms.kku.edu.sa • https://www.coursera.org/
4. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

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.) Lecture halls can accommodate up to 60 students equipped with whiteboards, Tables, and Chairs
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) None

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching A survey, provided by quality unit, is used to get students' feedback on instructor's approach of teaching, course's pros and cons, and their suggestions. Moreover, instructor is expected to discuss with students and hear from them about their feedback regarding the course weaknesses, strengths, syllabus, teaching method, and suggestions for improvements.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department

Teaching is also evaluated based on:

- The analysis of feedback/result of the surveys distributed to the students.
- Observation and discussion with students about the teaching strategies and assessment methods.
- Department Head's evaluation of the instructors' teaching performance.

3. Processes for Improvement of Teaching

- Workshops organized by E-Learning Deanship at the university
- The recommendations, suggestions for improvement, and taking the necessary actions will be based on the result of the surveys distributed to students as well as the evaluation of the program coordinator.
- Further, course instructors also are supposed to carry out their own analysis from the results of evaluation, and make judgments about what can be done better and how.
- The list of suggestions as an improvement process for the next semester should be used by teaching staff who will give the 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)

- Standardized tests for all sections graded by a group of our faculty members.
- Exam questions paper and answers key are approved by course coordinator.
- Result is approved by the department head and the dean before being confirmed by course instructors.
- Finally, Department Head confirm the result in the academic system.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- The department reviews the course characterization and recommended books every two years.
- Based upon the results of evaluation planned, a course report should be prepared.
- The course report summarizes the extent to which the course objectives have been achieved.
- In addition, it should state the course related shortage, what areas need improvement, and the suggested ways to overcome each problem. Moreover, proposed changes should be determined in the report and whether the previously suggested changes had improved or still existed.
- Students' results, course syllabus, course specification, course reports, and exam questions should be revised by the course coordinator, and then submitted to the department quality committee in order to assure that all quality predetermined standards have been applied.

Name of Course Instructor _____

Signature: _____ Date Specification Completed: _____

Program Coordinator: _____

Signature: _____ Date Received:_____