جامعة المجمعة
Majmaah University

Course Specifications

Institution:	College of sciences at Al-Zulfi
Academic Department :	Mathematics.
Programme :	Computers Science and Information
Course :	Calculus 1
Course Coordinator :	Dr.Abd El-Monem Megahed
Programme Coordinator :	
Course Specification Approved Date :	22./ 12 / 1435 H

A. Course Identification and General Information

1 - Course title : . Calculus 1	Course Code: MATH 212
2. Credit hours : 3 (3+0+0)	
3 - Program(s) in which the course is offered:	Department of Computer Science
4 – Course Language : English	
5 - Name of faculty member responsible for the course:	Dr.Abd El-Monem Megahed
6 - Level/year at which this course is offered :	Level 3
7 - Pre-requisites for this course (if any) : • **PMATH 127**	
8 - Co-requisites for this course (if any) : •	
9 - Location if not on main campus **:** Main Campus , Zulfi city	

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**85 %**
B - Blended (traditional and online)		What percentage?	**……. %**
D - e-learning		What percentage?	**……. %**
E - Correspondence		What percentage?	**……. %**
F - Other	√	What percentage?	**15 %**

Comments :

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B Objectives

What is the main purpose for this course?

Study of main concepts of Calculus as follows:

1. Introduces specific tools for analysis and verification and a practical framework for understanding important computing ideas.
2. Furnishes procedures, and processes to describe a mathematical result in everyday terms.
3. Describes and defines mathematical models that explain and express physical phenomenon, chemical reaction, and even commercial, social, and political relations.
4. Constructs calculus tools that create well developed accurate solutions.
5. Verifies independent critical thinking and problem solving skills

Briefly describe any plans for developing and improving the course that are being implemented :

1. Cooperate with other educational institutions to find how they deal with the subject.
2. Re- new the course references frequently.
3. Frequently check the latest discovery in science to improve the course objectives.
4. The course needs the use of computers.
5. Posting some course material on the websites to help the students.
6. Focusing on generic skills.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
i. Definitions, Domain, Range, Mathematical Modeling, Composition, boundedness, Equality, Intervals of Increase and Decrease, Piecewise-defined functions, Symmetric and Homogenous Functions. ii. Classification, Important types, Graphs and Related Properties, Algebraic Operations on the graph. The Inverse: Conditions and Tests of Existence, Principal Branches, Analytical and Graphical Determination of the inverse. iii. Indeterminate Forms (0* ∞-∞): Definitions, Concepts, Related Theorems, and Evaluations, Definitions of Continuity and Discontinuity	3	9
i. Basic Concepts; Change; Average of Change and Rate of Change. Algebraic and Geometrical meanings. ii. Elementary Functions: Power Function, Trigonometric Function and their Inverse, Hyperbolic Functions and their Inverse. And regarding : Graph, Domain, Range, Symmetry, Periodicity.	4	12
i. General derivatives: Implicit Differentiation, Parametric Differentiation and the Chain Rule. ii. Important theorems: Definitions and importance of: Roll's, Mean Value, Maclurin's, Taylor's and L'Hopital Theorems. iii. Geometric applications: Curve tracing, Polar Coordinates, Famous polar curves.	4	12
Introduction & Basic Concepts and Properties. Notable Remarks. Tables Of Standard Integration (All Elementary Functions), Basic Forms, Various Skills Using Algebraic Relations to obtain different forms of the solution of the same problem.	2	6
Completing a perfect square, Partial Fractions, By-Parts, Substitutions.	2	6

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	15	-	-	-	45
Credit	2	1	-	-	-	3

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

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Recognize, indicate and discuss the rate of growth/decay of any relation. Classify, and convert relations from one domain to another to reproduce new adequate form that clearly match a solution. Summarize procedures, processes and describe the mathematical results. Distinguish the importance of the different terms in a given relation	**Start** each chapter by general idea and the benefit of it. **Demonstrate** the course information and principles through lectures.	Exams Midterms Final examination.
1.2	**Outline** the logical thinking. Analyze the problem, plan for the solution, develop the solution(s), and justify these solution(s). Manage and compile the effects of quantities that can never be directly evaluated	**Provide** main ways to deal with the exercises.	Home work.
1.3	**State** the physical problems by mathematical method. . Practice how to apply and manipulate carefully the physical or/and geometric conditions on a set of variables to sketch the locus of these variables. Prepare and sketch clear illustrative graphs that demonstrate and measure the behavior of complicated relations	**Solve** some examples during the lecture.	Continuous discussions with the students during the lectures.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	with time or/and location(s). Sketch Flowcharts or/and apply Pseudo code to modify computer program(s) that execute the solution(s) of the manipulated problem(s). Acquire teamwork communications skills, e.g. Lead and motivate individuals. Able to work in stressful environment and within constraints		
2.0	**Cognitive Skills**		
2.1	The students will **explain and interpret** a general knowledge of Calculus	**Encourage** the student to look for some complicated problems in the different references.	Midterm exams Quizzes.
2.2	Enable students to **analyses** the mathematical problems.	**Ask** the student to attend lectures for practice solving problem.	Doing homework. Check the problems solution.
2.3	Student's ability to **write** physical equations in a correct mathematical way.	Homework assignments.	Discussion of how to simplify or analyses some problems.
3.0	**Interpersonal Skills & Responsibility**		
3.1	The student should **illustrate** how take up responsibility.	Ask the students to search the internet and use the library. Encourage them how to attend lectures regularly by assigning marks for attendance.	Quizzes of some previous lectures. Ask the absent students about last lecture.
3.2	Must be **shown** the ability of working independently and with groups.	Teach them how to cover missed lectures. Give students tasks of duties	Discussion during the lecture.
4.0	**Communication, Information Technology, Numerical**		
4.1	The student should illustrate how to communicating with: Peers,	Creating working groups with peers to	Discussing a

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	Lecturers and Community.	collectively prepare: solving problems and search the internet for some topics.	group work sheets.
4.2	The student should interpret how to Know the basic mathematical principles using the internet.	Give the students tasks to measure their: mathematical skills, computational analysis and problem solving.	Discuses with them the results of computations analysis and problem solutions.
4.3	The student should appraise how to Use the computer skills and library.	Encourage the student to ask for help if needed.	Give homework's to know how the student understands the numerical skills.
4.4	The student should illustrate how to Search the internet and using software programs to deal with problems.	Encourage the student to ask good question to help solve the problem.	Give them comments on some resulting numbers.
5.0	**Psychomotor**		
5.1	Not applicable	Not applicable	Not applicable
5.2	.....	.....	.....

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Midterm 1	5th week	15 %
2	Midterm 2	10th week	15 %
3	Homework + reports	During the semester	10 %
4	Final exam	End of semester	60%

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)

1- 6-office hours per week in the lecturer schedule.

2- The contact with students by e-mail , mobile, office telephone and website.

E. Learning Resources

1. List Required Textbooks

- - Schaum Mathematics Books (Calculus)

2. List Essential References Materials :

) Calculus And Its Applications. David J. Ellenbogen. Addison Wesley, 2007 James Stewart Brooks/Cole Publishing Company.

2) Calculus with Applications Margaret L. Lial Addison-Wesley .2004., Calculus with Analytic : James Stewart., Houghton Mifflin Company .,7th Edition, 2002

3. List Recommended Textbooks and Reference Material :

- Same as mention above
- .....
- .....

4. List Electronic Materials :

http://www.arxiv.org//
http://www.lms.ac.uk/
http://www.ams.org/
http:// mathforum.org/advanced/
http://www.ingentaconnect.com/ content/
http://www.zentrablblatt-math.org/ zmath/en/
http://www.ma.hw.ac.uk

5. Other learning material

F. Facilities Required

1. Accommodation

- The size of the hall must be proportionate to the number of students etc.)
- Provide enough seats for students

2. Computing resources

1- Hall is equipped with a computer
2- Provide a display projectors and peripherals
3- Smart board and accessories

3. Other resources

- .....NO.....

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Student evaluation electronically organized by the University.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

1- The colleagues who teach the same course discuss together to evaluate their teaching

3 Processes for Improvement of Teaching :

Course report, Program report and Program self-study.

- A tutorial lecture must be added to this 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)

The instructors of the course are checking together and put a unique process of evaluation

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

1-The following points may help to get the course effectiveness:

*** Student evaluation.**

*** Course report.**

*** Program report.**

*** Program self-study.**

2- According to point 1 the plan of improvement should be given

Course Specification Approved

Department Official Meeting No (…..) Date … / …. / ….. *H*

Course's Coordinator		Department Head	
Name :	Dr.Abd El-Monem Megahed	***Name :***	Prof: Adel Zaki
Signature :	.....	***Signature :***	.....
Date :	…./ … / …… *H*	***Date :***	…./ … / …… *H*