



**ATTACHMENT 2 (e)**

**Course Specifications**

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications  
(CS)**



## Course Specifications

Institution	Al Yamamah University	Date of Report	Thursday 14 October 2013
College: Computer and Information Systems (CCIS)			

### A. Course Identification and General Information

1. Course title and code: MTH 101 General Calculus			
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 of Computer and Information Systems Bachelor of Business Administration			
4. Name of faculty member responsible for the course Ms Lama Hneineh (coordinator)			
5. Level/year at which this course is offered 1 <sup>st</sup> Year			
6. Pre-requisites for this course (if any) MTH 001: Mathematics for Management OR ENG 04R: English Reading and Writing Level 4			
7. Co-requisites for this course (if any) None			
8. Location if not on main campus NA			
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:			



## B Objectives

1. What is the main purpose for this course? This course is designed to give students an introduction to differentiation and integration. It also exposes them to different examples of their applications in real life contexts.
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) <ul style="list-style-type: none"> <li>Increased use of LMS (Moodle based) for material delivery/receipt and discussion forums.</li> <li>Assignment of real life projects to students, as an application to theoretical contents</li> </ul>

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

This three-credit course provides an introduction to differential and integral calculus and shows how these mathematical techniques are used to derive an understanding of the quantitative models that underlie many business and IT practices.

Topics include: Differentiation and its applications, Integration and its applications; multivariable calculus

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
1. Rules for Differentiation	1	3
2. Product & Quotient Rules		
3. Chain Rule and Power Rule	1	3
4. Application to Economics	1	3
5. Derivatives of Logarithmic functions		
6. Derivatives of Exponential functions		
7. Elasticity of Demand	1	3
8. Implicit Differentiation		
9. Logarithmic Differentiation	1	3
10. Higher-Order Derivatives		
11. Increasing and Decreasing Functions	2	6
12. Relative Extrema		
13. Concavity		
14. Curve Sketching		
15. Applied Maxima and Minima		
16. The Indefinite Integral	1	3
17. More Integration Formulas	1	3
18. Techniques of Integration		
19. The Fundamental Theorem of Integral Calculus	1	3
20. Area between Curves		



21. Consumers' and Producers' Surplus 22. Integration by Parts	1	3
23. Integration by Partial Fractions 24. Differential Equations	1	3
25. Functions of Several Variables 26. Partial Derivatives	1	3
27. Implicit Partial Differentiation 28. Higher Order Partial Derivatives 29. Maxima and Minima of Functions of two variables	2	6
Total	15	45

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

3. Additional private study/learning hours expected for students per week.	4
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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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
<b>1.0</b>	<b>Knowledge</b> After successful completion of the course students will be able to		
1.1	Identify derivatives of functions of two variables, definite and indefinite integrals and functions of several variables.	Observe and Learn Group discussion	Class participation Quizzes
<b>2.0</b>	<b>Cognitive Skills</b> After successful completion of the course students will be able to		
2.1	Apply the derivatives of functions of two variables, definite and indefinite integrals and functions of several variables.	Observe and Learn Group discussion	Class participation Exams
2.2	Apply the derivatives in Economics contexts	Observe and Learn Group discussion Research activity	Class participation Exams Group presentation
2.3	Apply the derivatives in sketching curves	Observe and Learn Group discussion	Class participation Exams
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b> After successful completion of the course students will be able to		
3.1	Demonstrate team working skills	Group presentations	Group presentations
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b> After successful completion of the course students will be able to		
4.1	Calculate areas under curves	Observe and Learn Group discussion	Class participation Exams
4.2	Interpret results in business contexts	Group Projects	Group reports Group presentations
<b>5.0</b>	<b>Psychomotor</b>		
5.1	NA		

#### Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
<b>Knowledge</b>	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
<b>Cognitive Skills</b>	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
<b>Interpersonal Skills &amp; Responsibility</b>	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write



<b>Communication, Information Technology, Numerical</b>	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
<b>Psychomotor</b>	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested **verbs not to use** when writing measurable and assessable learning outcomes are as follows:

Consider      Maximize      Continue      Review      Ensure      Enlarge      Understand  
Maintain      Reflect      Examine      Strengthen      Explore      Encourage      Deepen

Some of these verbs can be used if tied to specific actions or quantification.

**Suggested assessment methods and teaching strategies are:**

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

#### 5. 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	Quiz 1	4	3.75% or 5% (depending on student's choice for project type)
2	Quiz 2	8	3.75% or 5% (depending on student's choice for project type)
3	Quiz 3	12	3.75% or 5% (depending on student's choice for project type)
4	Quiz 4	15	3.75% or 5% (depending on



			student's choice for project type)
5	Project	15	10% or 5% (depending on student's choice for project type)
6	Midterm exam	7	20%
7	Final exam	17	40%
8	Participation and classwork	All weeks	10%
9	HW assignment	All weeks	5%

## 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)

6 office hours are weekly provided for students' consultations and academic advice.

## E. Learning Resources

1. List Required Textbooks

Hausler, Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences, 13<sup>th</sup> ed. Prentice- Hall 2010.

2. List Essential References Materials (Journals, Reports, etc.)

NA

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

- Varberg, Calculus, 9th ed. Prentice-Hall 2007.
- Stewart, Calculus: Concepts and Contexts, Brooks Cole 2005.
- Tan, Applied Calculus for the managerial, life, and Social Sciences, 3th ed. Brooks Cole 2005.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

<http://lms.alyamamah.edu.sa>

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

[www.mymathlab.com](http://www.mymathlab.com)

## 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. Computing 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  During the course, students receive feedback forms that cover all aspects relating to their learning experience. These forms will then be collected and analyzed by the Academic Advising and Counseling Department. Next, the Academic Advising and Counseling Department will conduct a meeting with the concerned faculty to discuss the students' feedback outcomes.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor  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 <ul style="list-style-type: none"><li>• 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.</li><li>• Specialized workshops and seminars are conducted throughout academic year to address specific teaching strategies and improvements.</li></ul>
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.

**Faculty or Teaching Staff: Lama Hneineh**

**Signature:** \_\_\_\_\_

**Date Report Completed: 28/11/2013**

**Received by:** \_\_\_\_\_

**Dean/Department Head**

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_