

COURSE CLASSIFICATION FORM

Course Number/Name		Math-203 Calculus of functions of several variables	
Prepared by		Naveed Yaqoob	
Program Learning Outcomes	Levels* (0,1,2, 3,4,5)	Relevant Activities	Assessment Methods/Metrics
a1. Apply fundamentals and concepts of mathematics.	5	- Lectures - assignments	• 3 Midterm and final exam • Home work
a2. Apply fundamentals and concepts General sciences and Computer skills.	3	- assignments on basis and dimensions	• 1 Midterm and final exam • Home work
a3. Realize Social and ethical values.	0		•
b1. Read and construct mathematical arguments and proofs.	5	- Lectures - assignments	Home work
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.	4	- Lectures - assignments	• 3 Midterm and final exam+ Home work
c1. Work independently and within a team	3	Divided students into groups and using oral discussion with homework	• Home work
c2. Bear responsibility for different situations.	1		• Quizzes
c3. Realize codes of ethics and their importance.	0		
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.	4	- Lectures - assignments - Oral discussion	• 3 Midterm + final exam • Home work • Quizzes
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.	4	- Lectures - assignments	• Home work • Quizzes
d3. Critically interpret numerical and graphical data.	3	- assignments on determinats	• Home work • Quizzes
e1. Use computer and its applications as an office tool	3	- assignments on eigenvalues and eigenvectors	Home work Quizzes

* Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.

Course Objectives and Outcomes

Course Number: Math-203

Course Name: Calculus of functions of several variables

Prepared by: Naveed Yaqoob

Table 1: Relationship of course objectives/outcomes with PLO and ASIIN Criteria

Course Objectives:	Course Outcomes:	ASIIN	PLO
Have the knowledge of multivariable functions	Fundamental concepts	a, b, e, m	
	Improve and outline the multivariable functions.	b, c	
	Illustrate how to communicating with: Peers, Lecturers and Community.	l, n	
Have the knowledge of domain and range of functions of two or more variables.	Define and recognize domain and range	a, b, c, g, m, j	
	Shown the ability of working independently and with groups.	n	
	Illustrate how take up responsibility.	l, n	
Studying the properties limits, continuity and partial differentiation	Define and recognize the concepts of limits, continuity and partial differentiation	a, b, f, h	
	ability to write Mathematical equations in a correct mathematical way	a, j, g	
Studying the basics of maxima and minima.	Define and recognize the maxima and minima.	a, c, h	
		d, h	
	Illustrate how to Search the internet and using software programs to deal with problems	d, h	
Have the knowledge of double and triple integrals.	Define and recognize double and triple integrals.	a, e, i	
	interpret how to Know the linear operators and linear mappings using the internet	k, h, g	
Studying the problems on infinite series.	Define and recognize infinite series	a, i	
	interpret how to Know the eigenvalues, eigenvectors theory using the internet	h, k	
Studying the convergence tests for an infinite series	Define and recognize convergence tests	a, i	
	interpret how to Know the diagonalization using the internet	k, h, g	

Table 2: Methods of assessment of course syllabus

Assessment Method	Number/Type	Instructor Assessed	TA/Grader Assessed	Peer/Self Assessed
Homework	2 homework assignments	X		
Mid Terms/Final Exams	2 mid-term; 1 final exam	X		
Quizzes	One	X		
Lab Assignments				
Computer Assignments				
Computer Tools Used				
Oral Presentations				
Written Reports				
Other				

Outcome of ASIIN

a	Graduates have sound mathematical knowledge. They have a profound overview of the contents of fundamental mathematical disciplines and are able to identify their correlations.
b	Graduates are able to recognise mathematics-related problems, assess their solvability and solve them within a specified time frame.
c	Graduates have a basic ability to work in a scientific way. They are in particular able to formulate mathematical hypotheses and have an understanding of how such hypotheses can be verified or falsified using mathematical methods.
d	Graduates can flexibly apply mathematical methods of fundamental component areas of mathematics and are able to transfer the findings obtained to other component areas or applications.
e	Graduates have abstraction ability and are able to recognise analogies and basic patterns
f	Graduates are able to think in a conceptual, analytical and logical manner.
g	Graduates have an extensive comprehension of the significance of mathematical modelling. Are able to create mathematical models for mathematical problems as well as for problems in other areas of science or everyday life, and have a selection of problem solving strategies at their disposal.
h	Graduates can use basic methods of computer-aided simulation, mathematical software and programming to solve mathematical problems
i	Graduates are in a position to solve more extensive mathematical
j	Graduates can classify, recognise, formulate and solve mathematics-related problems
k	Graduates use electronic media competently
l	Graduates can implement lifelong learning strategies. A prerequisite for this is that the students are per-severing and that they have developed persistence.
m	Graduates can recognise, formulate, classify and solve problems in a mathematical context
n	Graduates can communicate, possibly also in a foreign language, and contribute their work effectively in teams

Instructor Course Evaluation Form

The purpose of this evaluation is to collect instructor feedback for improving this course and the Mathematics program. Information will also be used for program accreditation purposes.

I. Program Learning Outcomes Evaluations

Course Number/Name	Math203 Calculus and functions of several variables	Semester	Second1434/1435				
Instructor	Naveed Yaqoob						
The course listed above is designed for students to achieve the following outcomes at a Not At All, Low, Low- Medium, Medium, Medium-High or High level.							
Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.							
Program Learning Outcomes	Relevant Activities	5	4	3	2	1	0
a1. Apply fundamentals and concepts of mathematics.	- Lectures - assignments	5					
a2. Apply fundamentals and concepts General sciences and Computer skills.	- assignments on logic statements		4				
a3. Realize Social and ethical values.							0
b1. Read and construct mathematical arguments and proofs.	- Lectures - assignments	5					
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.	- Lectures - assignments - Oral discussion	5					
c1. Work independently and within a team						1	
c2. Bear responsibility for different situations.					2		
c3. Realize codes of ethics and their importance.							0
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.	- Lectures - assignments - Oral discussion		4				
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.	- Lectures - assignments		4				
d3. Critically interpret numerical and graphical data.	- assignments on information data and represented data			3			

Instructor Course Evaluation Form

e1. Use computer and its applications as an office tool										0
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II. Catalog Description , and Course Prerequisites Evaluations:

Based on your experiences in the course, please respond by circling the most appropriate number. Circle N/A for items that are not applicable, or if you have no opinion.

Catalog Description 1434-1435	<ul style="list-style-type: none"> • Fundamental concepts + domain and range of multivariable functions • Limit and continuity + partial differentiation • Problems related to maxima and minima • Lagrange multipliers for finding maxima and minima • Double and triple integrals • Infinite series • Convergence tests: Basic comparison test, limit comparison test and integral test 						
Course Prerequisites:	MTH 202	Circle One (5=Strongly Agree; 1=Strongly disagree)					
2a. Do you believe that the catalog description (above) is accurate for this course?		(5)	4	3	2	1	N/A
2b. Do you believe that the course prerequisites (above) are appropriate for this course?		5	(4)	3	2	1	N/A
2c. If not, please list any prerequisites you believe are not appropriate for this course.							

III. Textbook(s) and/or Lab Manuals (if applicable) Evaluations:

Textbook(s) and/or Lab Manuals (if applicable):	<ul style="list-style-type: none"> • Calculus by: Swokowski, Olinick, Pence • Calculus with Analytic Geometry by: Larsen and Hostetler 	Circle One (5=Strongly Agree; 1=Strongly Disagree)					
3a. In general, do you believe this to be an appropriate textbook for this course?		(5)	4	3	2	1	N/A
3b. Was the organization of the textbook appropriate for this course?		(5)	4	3	2	1	N/A
3c. Was the level of the textbook appropriate for this course?		5	(4)	3	2	1	N/A

IV. Computer usage (if applicable) Evaluations:

Computer usage (if applicable):		Circle One (5=Strongly Agree; 1=Strongly Disagree)					
5a. Was the use of computer well integrated with the course?		5	4	3	2	1	(N/A)
5b. Was the computer lab adequately equipped with well-maintained and updated computers?		5	4	3	2	1	(N/A)
5c. Was the computer lab equipped with sufficient number of computers?		5	5	5	2	1	(N/A)
5d. Were the special software packages (MATLAB, SPSS, C+, FORTRAN, etc) available and accessible?		5	4	3	2	1	(N/A)
5e. Was adequate technical support available when needed?		5	4	3	2	1	(N/A)

Student Course Evaluation Form

The purpose of this evaluation is to collect instructor feedback for improving this course and the Mathematics program. Information will also be used for program accreditation purposes.

I. Program Learning Outcomes Evaluations

Course Number/Name	Math203 Calculus and functions of several variables	Semester	Second 1434/1435					
Instructor	Naveed Yaqoob							
Student Name		Student ID						
The course listed above is designed for students to achieve the following outcomes at a Not At All, Low, Low- Medium, Medium, Medium-High or High level.								
Please mark (or type) High (5), Medium-High (4), Medium (3), Low-Medium (2), Low (1) or Not At All (0) indicating the level to which you believe, as an instructor, the students have achieved these outcomes in this course.								
Program Learning Outcomes			5	4	3	2	1	0
a1. Apply fundamentals and concepts of mathematics.								
a2. Apply fundamentals and concepts General sciences and Computer skills.								
a3. Realize Social and ethical values.								
b1. Read and construct mathematical arguments and proofs.								
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.								
c1. Work independently and within a team								
c2. Bear responsibility for different situations.								
c3. Realize codes of ethics and their importance.								
d1. Communicate a depth and breadth of mathematical knowledge, both orally and in writing.								
d2. Ability to Organize, connect and communicate mathematical and algorithmic ideas.								
d3. Critically interpret numerical and graphical data.								
e1. Use computer and its applications as an office tool								

Instructor Course Evaluation Form

II. Catalog Description, and Course Prerequisites Evaluations:

Based on your experiences in the course, please respond by circling the most appropriate number. Circle N/A for items that are not applicable, or if you have no opinion.

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Course Prerequisites:	MTH 202	Circle One (5=Strongly Agree; 1=Strongly disagree)				
2a. Do you believe that the catalog description (above) is accurate for this course?	5	4	3	2	1	N/A
2b. Do you believe that the course prerequisites (above) are appropriate for this course?	5	4	3	2	1	N/A
2c. If not, please list any prerequisites you believe are not appropriate for this course.						

III. Textbook(s) and/or Lab Manuals (if applicable) Evaluations:

Textbook(s) and/or Lab Manuals (if applicable):	<ul style="list-style-type: none"> • Calculus by: Swokowski, Olinick, Pence • Calculus with Analytic Geometry by: Larsen and Hostetler 		Circle One (5=Strongly Agree; 1=Strongly Disagree)			
3a. In general, do you believe this to be an appropriate textbook for this course?	5	4	3	2	1	N/A
3b. Was the organization of the textbook appropriate for this course?	5	4	3	2	1	N/A
3c. Was the level of the textbook appropriate for this course?	5	4	3	2	1	N/A

IV. Computer usage (if applicable) Evaluations:

Computer usage (if applicable):	Circle One (5=Strongly Agree; 1=Strongly Disagree)					
4a. Was the use of computer well integrated with the course?	5	4	3	2	1	N/A
4b. Was the computer lab adequately equipped with well-maintained and updated computers?	5	4	3	2	1	N/A
4c. Was the computer lab equipped with sufficient number of computers?	5	5	5	2	1	N/A
4d. Were the special software packages (MATLAB, SPSS, C+, FORTRAN, etc) available and accessible?	5	4	3	2	1	N/A
4e. Was adequate technical support available when needed?	5	4	3	2	1	N/A