

COURSE CLASSIFICATION FORM

Course Number/Name		Math483 Real analysis 2	
Prepared by		Dr. Mohammed Mohammed Khalaf	
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 logic statements	• 1 Midterm and final exam • Home work
a3. Realize Social and ethical values	0		•
b1. Read and construct mathematical arguments and proofs.	4	- Lectures - assignments	Home work
b2. Apply critical thinking skills to solve problems that can be modeled mathematically.	5	- Lectures - assignments - Oral discussion	• 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.	2		• 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 information data and represented data	• Home work • Quizzes
e1. Use computer and its applications as an office tool	3	- assignments on Logical expression	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 483

Course Name: Real analysis 2

Prepared by: Dr. Mohammed Khalaf

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

Course Objectives:	Course Outcomes:	ASIIN	PLO
Have the knowledge of Definition of Riemann integral- Darboux theorem and Riemann sums - Properties and the principle theorem in calculus..	Define and recognize the Definition of Riemann integral- Darboux theorem and Riemann sums - Properties and the principle theorem in calculus..	a, b, e, m	
	Improve and outline the logical thinking.	b, c	
	Illustrate how to communicating with: Peers, Lecturers and Community.	l, n	
Have the knowledge of Series of functions- Pointwise convergence and uniform convergence	Define and recognize Series of functions- Pointwise convergence and uniform convergence	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 Algebra and segma – algebra (sigma algebra)- Finite additivity and countable additivity- Main extension theorem	Define and recognize Algebra and segma – algebra (sigma algebra)- Finite additivity and countable additivity- Main extension theorem	a, b, f, h	
	ability to write Mathematical equations in a correct mathematical way	a, j, g	
Studying the outer measure- Measurable sets - Measure - Lebesgue measure and its properties	Define and recognize outer measure- Measurable sets - Measure - Lebesgue measure and its properties	a, c, h	
	Appraise how to Use the computer skills and library.	d, h	
	Illustrate how to Search the internet and using software programs to deal with problems	d, h	
Have the knowledge of Simple functions- Measurable functions- Lebesgue integral-	Define and recognize Simple functions- Measurable functions- Lebesgue integral-	a, e, i	
	interpret how to Know the Measurable functions- Lebesgue integral using the internet	k, h, g	
Studying the Theorems of convergence- The relation	Define and recognize the Theorems of convergence- The relation between Lebesgue and Riemann	a, i	

Course Objectives and Outcomes

between Lebesgue and Riemann integral .	interpret how to Know the Lebesgue and Riemann integral .	h, k	
Studying the Finite additivity and countable additivity	Define and recognize Finite additivity and countable additivity	a, i	
	interpret how to Know Finite additivity and countable additivity .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	5 homework assignments				x		
Mid Terms/Final Exams	2 mid-term; 1 final exam				x		
Quizzes	One biweekly				x		
Individual Projects	1-2 wks	3-4 wks	1/2 sem	Full sem			
Team Projects	1-2 wks	3-4 wks x	1/2 sem	Full sem x	x		x
Lab Assignments							
Computer Assignments							
Computer Tools Used							
Oral Presentations	one				x		x
Written Reports	one				x		
Other	Design project (project binder)				x		

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	Math483 real analysis 2	Semester	First 1434/1435				
Instructor	Dr. mohammed . khalaf						
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			3			
a3. Realize Social and ethical values.							0
b1. Read and construct mathematical arguments and proofs.	Lectures - assignments		4				
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	Divided students into groups and using oral discussion with homework			3			
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			
e1. Use computer and its applications as an office tool	- assignments on Logical expression			3			

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.

Catalog Description 1434-1435	Theorem in calculus. Series of functions- Pointwise convergence and uniform convergence- Algebra • and σ - algebra (sigma algebra)- Definition of Riemann integral- Darboux theorem and Riemann sums - Properties and the principle Finite additivity and countable additivity- Main extension theorem and outer measure- Measurable sets - Measure - Lebesgue measure and its properties- Simple functions- Measurable functions- Lebesgue integral- Theorems of convergence The relation between Lebesgue and Riemann integral .					
Course Prerequisites:	PMTH 112 + PMTH127		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):	[1] H. L. Royden : Real Analysis , 3 rd edition , Macmillan Publishing Co. , Inc. New York , 1988 [2] D. L. Cohn : Measure theory , Birkhauser Verlag AG , 1993. [3] S. J. Taylor : Introduction to Measure & Integration , Cambridge University Press, 1973.					
3a. In general, do you believe this to be an appropriate textbook for this course?	(5)	4	3	2	1	N/A

Instructor Course Evaluation Form

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	Math 483 real analysis 2	Semester	Second 1434/1435
Instructor	Dr. mohammed khalaf		
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			

Student 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.

Catalog Description 1434-1435	Theorem in calculus. Series of functions- Pointwise convergence and uniform convergence- Algebra and σ – algebra (sigma algebra)- Definition of Riemann integral- Darboux theorem and Riemann sums - Properties and the principle - Finite additivity and countable additivity- Main extension theorem - and outer measure- Measurable sets - Measure - Lebesgue measure and its properties- Simple functions- Measurable functions- Lebesgue integral- Theorems of convergence - The relation between Lebesgue and Riemann integral .					
Course Prerequisites:	PMTH 112 + PMTH127		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):	[1] H. L. Royden : Real Analysis , 3rd edition , Macmillan Publishing Co. , Inc. New York , 1988 [2] D. L. Cohn : Measure theory , Birkhauser Verlag AG , 1993. [3] S. J. Taylor : Introduction to Measure & Integration , Cambridge University Press, 1973. •					
	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

Student Course Evaluation Form

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