



Course Specifications

Course Title:	Analytical Geometry
Course Code:	42041225
Program:	B. SC in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	AlBaha University



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A. Course Identification

1. Credit hours: 3(2+2)
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Level 3 / year 2
4. Pre-requisites for this course (if any): N/A
5. Co-requisites for this course (if any): N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	51	85%
2	Blended	6	10%
3	E-learning	3	5%
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	30
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	30
2	Assignments	15
3	Library	15
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	60

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

The Cartesian and polar coordinates – The straight line in its different forms – Equation of two straight lines

Transformation and rotation of axes– The circle – Conic sections in general form.

Rectangular, spherical and cylindrical coordinates – The distance between two points-

Direction cosines of a line – Angle between two lines

The plane in space – The line in space

Cylinder - Cone – Sphere-Ellipsoid – Hyperboloid of one sheet – Hyperboloid of two sheets –

Elliptic paraboloid – Hyperbolic paraboloid

2. Course Main Objective

Having the knowledge of different coordinates in plane and space

- Having the knowledge of the line and circle.
- Having the knowledge of conic sections in general form.
- Having the knowledge of plane and straight line in space
- Getting the knowledge of quadric surfaces (Cylinder- Cone – Sphere – Ellipsoid – Hyperboloid of one sheet – Hyperboloid of two sheets – Elliptic paraboloid – Hyperbolic paraboloid).

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define the concepts of analytical Geometry	
1.2	Recognize the Cartesian and polar coordinates, The straight line in its different forms, Equation of two straight lines the transformation and rotation of axes, the circle – conic sections in general form.	
1.3	Demonstrate rectangular, spherical and cylindrical coordinates, the distance between two points, direction cosines of a line, angle between two lines, and also the plane in space, the line in space, cylinder , cone, sphere, ellipsoid, hyperboloid of one sheet, hyperboloid of two sheets, elliptic paraboloid, and hyperbolic paraboloid	
2	Skills :	
2.1	Find different forms of graph equations by transformation and rotation of axes, the distance between two points, the angle between two lines, graphs equations by their properties.	
2.2	Explain the methods in defining rectangular, spherical and cylindrical coordinates, the distance between two points, direction cosines of a line, angle between two lines, plane in space, the line in space, cylinder , cone, sphere, ellipsoid, hyperboloid of one sheet, hyperboloid of two sheets, elliptic paraboloid, hyperbolic paraboloid	
2.3	Sketch mathematical curves from equations	
2.4	the circle, conic sections in general form	
3	Competence:	
3.1	Take responsibility for own learning and professional development	
3.2	Work effectively in groups and exercise leadership when appropriate.	
3.3	Present information clearly in both written and oral form.	
3.4	Communicates effectively in oral and written form in educational situations related to the subjects of the course	

C. Course Content

No	List of Topics	Contact Hours
1	The Cartesian and polar coordinates – The straight line in its different forms – Equation of two straight lines	12
2	Transformation and rotation of axes– The circle – Conic sections in general form.	16
3	Rectangular, spherical and cylindrical coordinates – The distance between two points- Direction cosines of a line – Angle between two lines	12
4	The plane in space – The line in space	8

5	Cylinder - Cone – Sphere-Ellipsoid – Hyperboloid of one sheet – Hyperboloid of two sheets – Elliptic paraboloid – Hyperbolic paraboloid	12
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Define the concepts of analytical Geometry	<ul style="list-style-type: none"> • Lectures • Debate and discussion • Assignments (Co-operative & Individual assignments). Working in small groups 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. Final written exams.
1.2	Recognize the Cartesian and polar coordinates, The straight line in its different forms, Equation of two straight lines the transformation and rotation of axes, the circle – conic sections in general form.	<ul style="list-style-type: none"> • Lectures • PowerPoint presentation • Scientific movies and animated life cycles. • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. Final written exams.
1.3	Demonstrate rectangular, spherical and cylindrical coordinates, the distance between two points, direction cosines of a line, angle between two lines, and also the plane in space, the line in space, cylinder, cone, sphere, ellipsoid, hyperboloid of one sheet, hyperboloid of two sheets, elliptic paraboloid, and hyperbolic paraboloid	<ul style="list-style-type: none"> • Lectures • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • Presentation of summaries and reports during lectures.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		groups Individual & group research	<ul style="list-style-type: none"> • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written exams.
2.0	Skills		
2.1	Find different forms of graph equations by transformation and rotation of axes, the distance between two points, the angle between two lines, graphs equations by their properties.	<ul style="list-style-type: none"> • Lectures • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • Presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written exams.
2.2	Explain the methods in defining rectangular, spherical and cylindrical coordinates, the distance between two points, direction cosines of a line, angle between two lines, plane in space, the line in space, cylinder, cone, sphere, ellipsoid, hyperboloid of one sheet, hyperboloid of two sheets, elliptic paraboloid, hyperbolic paraboloid	<ul style="list-style-type: none"> • Lectures • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • Presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written exams.
2.3	Sketch mathematical curves from equations	<ul style="list-style-type: none"> • Lectures • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • Presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written exams.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.4	the circle, conic sections in general form	<ul style="list-style-type: none"> • Lectures • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written exams.
3.0	Competence		
3.1	Take responsibility for own learning and professional development	Team work- Assignments-student presentation-reporting- Scientific media- Training on scientific drawing, reading slides and reporting- Lab work Co-operative & Individual assignments. Cooperative Learning.	<ul style="list-style-type: none"> • Evaluation of individual & group works. • Observation Card
3.2	Work effectively in groups and exercise leadership when appropriate.	<ul style="list-style-type: none"> • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Evaluation of individual & group works. • Observation Card
3.3	Present information clearly in both written and oral form.	<ul style="list-style-type: none"> • Team work • small groups and the distribution of roles. • PowerPoint presentation. Writing reports	Oral discussion Report evaluation Observation cards
3.4	Communicates effectively in oral and written form in educational situations related to the subjects of the course	<ul style="list-style-type: none"> • small groups and the distribution of roles. • PowerPoint presentation. Writing reports	Oral discussion Report evaluation Observation cards

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	10
2	Midterm Written Theoretical Exam	9	20
3	Quiz2	13	10
4	Home Work and Exercises	During Semester	10
5	Final Written Theoretical Exam	17	50

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement .

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • Algebra and Trigonometry with Analytic Geometry, Earl W. Swokowski , Jeffery A.Cole, Cengage Learning, 2011. • Calculus and Analytic Geometry (9th Edition), George B. Thomas; Ross L. Finney, Addison Wesley, 1995
Essential References Materials	Algebra and Trigonometry with Analytic Geometry, Earl W. Swokowski , Jeffery A.Cole, Cengage Learning, 2011.
Electronic Materials	https://en.wikipedia.org/wiki/Analytic_geometry
Other Learning Materials	-----

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms equipped with smart board and display screen for (35) students
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of	The teacher using an excel	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
course learning outcomes	program that measure CLO's	
Quality of learning resources	Students and Program Leaders	Direct
Built-in university website reports on courses and student satisfaction questionnaire	students	Indirect
NCAA course evaluation questionnaire.	students	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	



Course Specifications

Course Title:	Vectors and Mechanics
Course Code:	42041219
Program:	B. Sc in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	Al Baha University



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1. Learning Resources		5
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A. Course Identification

1. Credit hours:	3(2+2) hours			
2. Course type				
a. University	Al Baha	College	Science	Department <input checked="" type="checkbox"/>
b. Required	<input checked="" type="checkbox"/>	Elective	<input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered:				
4. Pre-requisites for this course (if any):	Differential and Integral (1) (42041103)			
5. Co-requisites for this course (if any):	N/A			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom (√)	3 hours	95
2	Blended		
3	E-learning		
4	Correspondence		
5	Other (Exercises) (√)		5

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	30
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	3
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	3

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description	Course Description: (Note: General description in the form used in Bulletin or handbook).
2. Course Main Objective	<p>1. Summary of the main learning outcomes for students enrolled in the course.</p> <p>To learn the students to the basic concepts methods, theorems and results in Vectors and Mechanics (First part is vectors such as vector addition, scalar and vector product, vector triple product, integrals of vector functions, arc length and the unit tangential vector, unit normal vector, Torsion and binormal vector. Second part is mechanics such as force - Torque - Newton's laws of motion - Particle motion under the influence of gravity in resisting medium - Constrained motion - Work - Energy - Conservation force - Center of mass- Motion of rigid bodies).</p>

2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Increasing use of references and the Internet in the collection of knowledge resources that are difficult to be provided in the library of Faculty / university
- Choosing new subjects, new books and latest papers.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1.0	Knowledge:	
K1	Know the main concepts and definition of the vectors and mechanics.	
K2	State mathematical axioms and theorems of vectors and mechanics (Vector addition, scalar and vector product, vector triple product- arc length - unit tangential - unit normal vector - torsion - binormal vector - force - Torque - Newton's laws of motion - Constrained motion - Work – Energy – Conservation force).	
K3	Recognize calculus theorems and problems.	
S0	Skills :	
S1	Students should be able to apply mathematical concepts, axioms, and theorems of vectors and mechanics in solving mathematical problems.	
S2	Students should be able to construct mathematical arguments and proofs.	
S3	Students should be able to solve mathematical problems in mechanics by using vector calculus.	
3	Competence:	
C1	Students should be able to use information and communication technologies to collect, interpret and analyze information in both verbal and written forms.	
C2	Students should be able to develop their self-learning skills.	
C3	Students should be able to take responsibility for their own learning.	
C4	Students should be able to demonstrate the work either independently or being a part of a team.	

C. Course Content

No	List of Topics	Contact Hours
1	Algebra of Vectors: Scalar and vector quantities - Properties of the vector quantities – Vectors algebra (Vector addition, scalar and vector product, vector triple product, vector field) and its applications.	8
2	Derivative of scalar vector functions : Limits of vector functions, continuity of vector functions, Derivative of vector functions, differentiation rules of derivative of vector functions, partial derivative of vector functions, integrals of derivative of vector functions, arc length and the unit tangential vector, unit normal vector, Torsion and binormal vector.	8
3	Kinematics - force - Torque - Newton's laws of motion.	8
4	Motion of particle under the influence of gravity in resisting medium –	8

	Constrained motion.	
5	Problems on the changing mass	8
6	Work – Energy – Conservation force.	8
7	Central forces - Orbits of the planets - Orbits stability - Keplers's laws of planetary motion.	12
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Access to basic information and the main concepts of method of proofs of vectors and mechanics.	Developing basic communicative ability through: <ul style="list-style-type: none"> • Lectures • Team work • Oral discussion • Scientific discussion. • Open discussion. 	<ul style="list-style-type: none"> • Homework. • Periodic tests • Web search • Class Participation • Midterm tests Final exams
1.2	Know the principles of vectors and mechanics (vectors properties, derivative and scalar integral of vector functions and its applications - force - Torque - Work – Energy- Central forces).		
1.3	Learning the student to face the problems related to mathematics in the basic sciences and engineering sciences.		
2.0	Skills		
2.1	Determine the vectors properties, derivative and scalar integral of vector functions - force - Torque - Work – Energy- Central forces and some the applications on its.	<ul style="list-style-type: none"> • Lectures • Exercises • Case studies • Individual • Presentations Brainstorming.	<ul style="list-style-type: none"> • Class Participation • Essay Question • Presentation Research
2.2	Construct arguments and proofs in vectors and mechanics		
2.3	Solve problems in vectors and mechanics		
3.0	Competence		
3.1	Students should be able to use information and communication technologies to collect, interpret and analyze information in both verbal and written forms.	<ul style="list-style-type: none"> • Small group discussion • Whole group discussion • Brainstorming Presentation.	<ul style="list-style-type: none"> • Written Exam • Web search and writing reports. • Class Activities • Periodic tests
3.2	Students should be able to develop their self-learning skills.		
3.3	Students should be able to take responsibility for their own learning.		
3.4	Students should be able to demonstrate the work either independently or being a part of a team.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1 (Periodic test 1)	5	10%
2	Midterm Exam	9	20%
3	Quiz 2 (Periodic test 2)	13	10%
4	Homework & participation	During the term	10%
5	Final theoretical exam	16	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

(include amount of time faculty are available each week)

- Follow-up by the head of the department.
- Define 8 office hours per week for each member of the faculty who resides in his office.
- Define 2 hours weekly as Academic guidance for each faculty member for guiding a group of students academically.
- Give guidance so encouraging in assessing the performance of a teacher.
- Creating the means to make the teacher benefit of his time during his stay in office.

Non-scientific services to assist the teacher to attend office hours.

F. Learning Resources and Facilities

1. Learning Resources

1. Required Textbooks	1. Required Text(s) <ul style="list-style-type: none"> • Course notes • Chapters from different text books
2. Essential References	
<p>[1] M. R. Spiegel Schaum's Outline of Theory and Problems of Theoretical Mechanics , McGraw-Hill Book Company, 1998.</p>	
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)	
<p>[1] – C. Smith, B. Smith, Mechanics, John Willy and Sons 1982. [2] - N. Burghers, M. Downs, Modern Introduction to Classical Mechanics and control, Ellis Itorwood 1975.</p>	
4. Electronic Materials, Web Sites etc	
<p>http://www.google.com.</p>	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Teaching classes equipped with white board and display screen for (30) students
Technology Resources (AV, data show, Smart Board, software, etc.)	- Provision of computers for students training to be used in research on scientific topics that serve the course.

Item	Resources
<p style="text-align: center;">Other Resources</p> <p>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, et	Students, Faculty, Program Leaders, Peer Reviewer	

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	



Course Specifications

Course Title:	Specialized English Language
Course Code:	42041227
Program:	B. Sc in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	AlBaha University



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F. Learning Resources and Facilities	6
1. Learning Resources	6
2. Facilities Required.....	6
G. Course Quality Evaluation	7
H. Specification Approval Data	7

A. Course Identification

1. Credit hours: 2 Hours
2. Course type
a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Third Level / Second Year.
4. Pre-requisites for this course (if any): None
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	60%
2	Blended		
3	E-learning	2	40%
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30 Hours
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	30 Hours
Other Learning Hours*		
1	Study	30 Hours
2	Assignments	15 Hours
3	Library	30 Hours
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	105 Hours

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is intended for students of non-English major in the Department of Mathematics.

2. Course Main Objective

- To develop students' English language skills of mathematics with emphasis on reading, listening, speaking and writing.
- To teach students how to decipher the mathematical texts and the language of mathematics.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge	
1.1	Students should be able to recognize mathematical symbols and expressions.	K1
2	Skills	
2.1	Students should be able to pronounce mathematical symbols and expressions properly.	S4
2.2	Students should be able to read mathematical texts.	S4
2.3	Students should be able to translate verbal phrases into mathematical expressions.	S4
3	Competence	
3.1	Students should be able to use information and communication technologies to gather, interpret and communicate information and ideas.	C1
3.2	Students should be able to develop their self-learning skills.	C2
3.3	Students should be able to demonstrate the work either independently or being a part of a team.	C4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction	2
2	Used Alphabets in Mathematics - Roman Alphabet. - Greek Alphabet.	2
3	Basic Symbols	2
4	Algebra	2
5	Trigonometric and Hyperbolic Expressions	2
6	Logic and Set Theory - Mathematical and basic arguments.	4
7	Elementary and Analytic Geometry	2
8	Statistics and Mathematics of Finance	2
9	Calculus and Analysis	3
10	Linear Algebra	3
11	Equations - Polynomial equations. - Differential equations. - The System of equations.	2
12	Topology and Abstract Spaces	2
13	Diagrams and Graphs	2
	Total	30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Students should be able to recognize mathematical symbols and expressions.	- Lectures. - Library.	- Homework Assignments. - Written Mid-Term Examinations. - Written Final Examination.
2.0	Skills		
2.1	Students should be able to pronounce mathematical symbols and expressions properly.	- Lectures. - Library.	- Homework Assignments. - Written Mid-Term Examinations. - Written Final Examination.
2.2	Students should be able to read mathematical texts.	- Lectures. - Library.	- Homework Assignments. - Written Mid-Term Examinations. - Written Final Examination.
2.3	Students should be able to translate verbal phrases into mathematical expressions.	- Lectures. - Library.	- Homework Assignments. - Written Mid-Term Examinations. - Written Final Examination.
3.0	Competence		
3.1	Students should be able to use information and communication technologies to gather, interpret and communicate information and ideas.	Teaching students how to use ICT.	- Homework Assignments.
3.2	Students should be able to develop their self-learning skills.	Encouraging students to develop their self-learning skills from different learning resources such as printed book, eBook, online courses, websites, educational applications, etc.	- Homework Assignments.
3.3	Students should be able to demonstrate the work either independently or being a part of a team.	- Inspiring students to believe in themselves. - Encouraging students to use cooperative learning as an educational approach.	- Homework Assignments. - Group discussions in the classroom.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework Assignments	During the Semester	10%
2	Quiz 1	The 5 th Week	10%
3	Mid-Term Exam	The 9 th Week	20%
4	Quiz 2	The 13 th Week	10%
5	The Final Examination(Written Test)	The 16 th Week	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

In addition to lectures, there are two ways to reach the faculty members:

- 1- **Office hours:** faculty members assign minimum 6 office hours per week for student consultations and academic advice. The consultation time is mentioned in the faculty members' timetable and is display on the faculty member's office door.
- 2- **Email:** Students may also reach the faculty members through emails, which should be written in the syllabus of the course.

Each faculty member is assigned to a group of students as an academic advisor in order to:

- 1- review and approve his/her students' registration forms during the registration week.
- 2- follow-up his/her students' academic progress.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> - Lawrence A. Chang, Handbook for Spoken Mathematics, Lawrence Livermore Laboratory, 1983. - Jan Nekovar, Mathematical English (a brief summary), Universite Paris 6, 2011. - N.V.Solovey and I.V.Letunovskaya, English for Students of Mathematics.
Essential References Materials	<ul style="list-style-type: none"> - Lawrence A. Chang, Handbook for Spoken Mathematics, Lawrence Livermore Laboratory, 1983. - Jan Nekovar, Mathematical English (a brief summary), Universite Paris 6, 2011. - N.V.Solovey and I.V.Letunovskaya, English for Students of Mathematics. - Lecture Notes.
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classrooms.
Technology Resources (AV, data show, Smart Board, software, etc.)	- Data show. - Smart or regular board.

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Library.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	-Students. -Department head.	Indirect.
Extent of achievement of course learning outcomes.	-Faculty. -Department head.	Direct.
Quality of learning resources.	-Students. -Department head.	Indirect.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Dr. Ahmad Ali Alalyani Dr. Ahmed Hamed Dr. Ali Hassan Dr. Basheer Othman Dr. Sayed Saber
Reference No.	
Date	



Course Specifications

Course Title:	Fundamentals of Math
Course Code:	42041221
Program:	B. Sc in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	AlBaha University



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A. Course Identification

1. Credit hours: 3 hrs (2 lecture + 2 Practical)
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 3 Second Year
4. Pre-requisites for this course (if any): Differential & Integral(1) (42041103)
5. Co-requisites for this course (if any): NA

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	75
2	Blended	√	10
3	E-learning	√	15
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	30
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	90
2	Assignments	45
3	Library	45
4	Projects/Research Essays/Theses	----
5	Others(specify)	
	Total	180

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

<p>1. Course Description: This course to study some basis which students need it in pure mathematics and takes the followings: Principles of mathematical logical, Some of methods of proof (direct and indirect proof , contradiction proof), Mathematical induction, Sets, basic set operations, Equivalent sets , finite and infinite sets, countable sets, cardinal number, partitions set, Cartesian product of sets, definition of relation and examples, type of relations, equivalence relations and partitions, equivalence classes, order relations, Mappings, inverse image, type of Mappings, composition of Mappings, inverse Mappings.</p>
<p>2. Course Main Objective: Generally, Students are expected to To comprehend the basic concepts methods, theorems and results in Algebraic Structure</p>

(mathematical induction, principles of mathematical logical, sets, relations, equivalence relations, Mappings, functions).

Specially,

- 1- Have the knowledge of mathematical logic and operation on them.
2. Have the knowledge of the methods of proof (induction, contrapositive, contradiction).
3. Studying the mappings, sets and their properties.
4. Studying the relations and their properties and how we can represented, also studying the equivalence relation.

3. Course Learning Outcomes

CLOs		AlignedPLOs
1	Knowledge:	
1.1	Define algebraic operations between given sets, Cartesian products of sets, relations and mapping, truth tables of logical connectives as well as quantifiers and cardinal numbers of finite, infinite and countable sets.	K1
1.2	State principle of mathematical induction and composition of mapping and its inverse.	K2
1.3	Describe ordered relations and their properties and the equivalence classes related to equivalence relations.	K3
2	Skills :	
2.1	Solve the problems concerning mathematical induction and determination of truth a given formula via direct and indirect proofs.	S1
2.2	Finding cardinal numbers for a given set, study the given relation when it is an equivalent or not and if it does find its equivalence classes.	S3
2.3	Prove some important theorems and results concerning equivalence relations and mappings.	S2
2.4	Study given binary relations and the system related when will form a group and field.	S4
3	Competence:	
3.1	To participate in the discussion.	C1
3.2	Study, learn and work independently.	C2
3.3	Work effectively in teams.	C3

C. Course Content

No	List of Topics	Contact Hours
1	Principles of mathematical logical, Some of methods of proof (direct and indirect proof , contradiction proof), Mathematical induction	12
2	Sets, basic set operations, Equivalent sets , finite and infinite sets, countable sets, cardinal number, partitions set	12
3	Cartesian product of sets, definition of relation and examples, type of relations, equivalence relations and partitions, equivalence classes, order relations.	12

4	Mappings, inverse image, type of Mappings, composition of Mappings, inverse Mappings.	16
5	Binary operations, groups and their properties, systems with two binary operations.	8
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Define algebraic operations between given sets, Cartesian products of sets, relations and mapping, truth tables of logical connectives as well as quantifiers and cardinal numbers of finite, infinite and countable sets.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	Continuous evaluation through interaction, and presentation of research projects. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams.
1.2	State principle of mathematical induction and composition of mapping and its inverse.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research.	Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams.
1.3	Describe ordered relations and their properties and the equivalence classes related to equivalence relations.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research.	Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams.
2.0	Skills		
2.1	Solve the problems concerning mathematical induction and determination of truth a given formula via direct and indirect proofs.	• Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Finding cardinal numbers for a given set, study the given relation when it is an equivalent or not and if it does find its equivalence classes.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams
2.3	Prove some important theorems and results concerning equivalence relations and mappings.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams
2.4	Study given binary relations and the system related when will form a group and field.		
3.	Competence		
3.1	To participate in the discussion.	Team work- Assignments- student presentation- reporting- Scientific media Co-operative & Individual assignments. Cooperative Learning.	Evaluation of individual & group works. Observation Card
3.2	Study, learn and work independently.	Working in small groups Group research	Evaluation of individual & group works.
3.3	Work effectively in teams.	Team work small groups and the distribution of roles. PowerPoint presentation. Writing reports	Oral discussion Report evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	10
2	Midterm Written Theoretical Exam	9	20
3	Quiz2	13	10
4	Assignments, Activities & Attendance	During Semester	10
5	Final Practical Exam	-	-
6	Lab Reports	-	-
7	Final Written Theoretical Exam	16	50
8			

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	[1] Discrete Mathematics and Its Applications, Kenneth H. Rosen, WCB/Mc Graw-Hill, 2012 [2]- Richard Johnsonburg, Discrete Mathematics, Prentice Hall, 6th Edition (2004). معروف سمحان وفدوى ابو مريفة، أسس الرياضيات، دار الخريجي للنشر والتوزيع، 2006[3]
Essential References Materials	. List Essential References Materials (Journals, Reports, etc.) [[1] - T .Bl-yth and E. Robertson, 1984, Sets, relations and mapping. [2] S. Lipschutz, Set Theory and Related Topics, Schaum's Outlines Series, Second edition. McGraw, 1998. [3] K. Devlin, Sets, Functions and Logic, Chapman and Hall, (1995). [4] S. S. Epp, Discrete Mathematics with Applications, PWS-Cant Pub. Co., 1990. [5] L. Lesniak, Discrete Structures, Logic, and Computability, Jones and Bartlett Publishers, (2002). [6] P. Fletcher, H. Hoyle and C. W. Patty, Foundations of Discrete Mathematics, PWS-Cant Pub. Co., (1991).
Electronic Materials	Web Sites http://www.google.com .
Other Learning Materials	----

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms equipped with smart board and display screen for (40) students
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	-----

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	The teacher using an excel program that measure CLO's	Direct
Quality of learning resources	Students and Program Leaders	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	



Course Specifications

Course Title:	Principles of statistics and probability
Course Code:	42041217
Program:	B. Sc in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	AlBaha University



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2. Assessment Tasks for Students		5
E. Student Academic Counseling and Support	5	
F. Learning Resources and Facilities	5	
1. Learning Resources		5
2. Facilities Required		5
G. Course Quality Evaluation	6	
H. Specification Approval Data	6	

A. Course Identification

1. Credit hours: 3(2+2) hours (lecture)
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 3 th Level: / 2 th year:
4. Pre-requisites for this course (if any): Non
5. Co-requisites for this course (if any): Non

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	80%
2	Blended	√	10%
3	E-learning	√	5%
4	Correspondence		
5	Other		5%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	30
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	90
2	Assignments	45
3	Library	45
4	Projects/Research Essays/Theses	-----
5	Others(specify)	
	Total	180

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the basic concepts of statistical analysis, with a focus on both univariate (single-variable) and bivariate (two-variable) data. The course starts with an introduction to statistics terms and then moves on to organization and display of data. Analysis of univariate data by way of measures of central tendency (such as the mean or average), dispersion (such as the variance), and asymmetry ("skewness") is presented next, followed by an introduction to probability theory

2. Course Main Objective

- Learn statistics terms
- Learn the organization and display of data
- Learn measures of central tendency, dispersion and skewness
- Learn basic concepts of statistical analysis that use univariate (single-variable) and vicariate (two-variable) data
- Learn the basics of probability theory

3. Course Learning Outcomes

CLOs		Aligned PLOs
Knowledge		
	Define the related basic scientific facts, concepts, principles and techniques in statistics and probability theory	K1
	Recognize the relevant theories and their applications in basic mathematics.	K2
	Recall Condition Correlation and Regression, probability use Bayes Theorem	K3
Skills		
	Apply statistical tools for simple data analysis, scientific models and tools effectively	S1
	Discuss the results of statistical measures	S1
	Evaluate probability of events using different rules	S3
	Solve problems using a range of formats and approaches in basic science	S3
	Present the data graphically.	S4
Competence		
	Use the internet to write reports about basic statistical principles	C1
	Work effectively in groups and exercise leadership when appropriate.	C3
	Present information clearly in both written and oral form.	C2
	Communicates effectively in oral and written form in educational situations related to the subjects of the course.	C1

C. Course Content

No	List of Topics	Contact Hours
1	Definition and general view of statistics	4
2	Measures of central tendency (Mean, Median, Mode) of the simple data and the frequency distribution	8
3	Measures of dispersion (The Range – The Variance and the standard deviation - Coefficient of variation) of the simple data and the frequency	8

	distribution	
4	Moments and Measure of Skewness and Kurtosis	4
5	Correlation measures, Simple Linear regression	8
6	Sample space and Events Counting Techniques (Fundamental basics, Addition Rule – Multi-placation Rule- Permutation and Combinations)	8
7	Definition of the probability and its applications	8
8	Conditional probability - Independence of events and Bayes theorem and its applications	8
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Define the related basic scientific facts, concepts, principles and techniques in statistics and probability theory	<ul style="list-style-type: none"> ● Lectures ● Debate and discussion ● Assignments (Co-operative & Individual assignments). Working in small groups	<ul style="list-style-type: none"> ● Continuous evaluation through interaction, and presentation of summaries and reports during lectures. ● Evaluation of assignments. ● Quiz1 & Quiz2. ● Midterm exam. ● Final written exams.
1.2	Recognize the relevant theories and their applications in basic mathematics.	<ul style="list-style-type: none"> ● Lectures ● PowerPoint presentation ● Debate and discussion. ● Assignments (Co-operative & Individual assignments). ● Cooperative Learning ● Working in small groups Individual & group research	<ul style="list-style-type: none"> ● Continuous evaluation through interaction, and presentation of summaries and reports during lectures. ● Evaluation of assignments. ● Quiz1 & Quiz2. ● Midterm exam. ● Final written exam.
1.3	Recall Condition Correlation and Regression, probability use Bayes Theorem	<ul style="list-style-type: none"> ● Lectures ● PowerPoint presentation ● Debate and discussion. ● Assignments (Co-operative & Individual assignments). ● Cooperative Learning ● Working in small groups ● Individual & group research 	<ul style="list-style-type: none"> ● Continuous evaluation through interaction, and presentation of summaries and reports during lectures. ● Evaluation of assignments. ● Quiz1 & Quiz2. ● Midterm exam. ● Final written exam
2.0	Skills		
2.1	Apply statistical tools for simple data analysis, scientific models and tools effectively	<ul style="list-style-type: none"> ● Lectures ● Debate and discussion. ● Assignments (Co-operative & Individual assignments). 	<ul style="list-style-type: none"> ● Continuous evaluation through interaction, and presentation of summaries and reports during lectures. ● Quiz1 & Quiz2.

		<ul style="list-style-type: none"> Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Midterm exam. Final written exam. Evaluation of assignments
2.2	Solve problems using a range of formats and approaches in basic science	<ul style="list-style-type: none"> Lectures Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exam.
2.3	Evaluate probability of events using different rules	<ul style="list-style-type: none"> Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Continuous evaluation through interaction, and presentation of summaries and reports during lectures. Evaluation of assignments. Quiz1 & Quiz2. Midterm exam. Final written exams.
3.0	Competence		
3.1	Use the internet to write reports about basic statistical principles	Team work- Assignments- student presentation- reporting- Scientific media Co-operative & Individual assignments. Cooperative Learning.	<ul style="list-style-type: none"> Evaluation of individual & group works. Observation Card
3.2	Work effectively in groups and exercise leadership when appropriate.	<ul style="list-style-type: none"> Working in small groups Group research	Evaluation of individual & group works.
3.3	Present information clearly in both written and oral form.	<ul style="list-style-type: none"> small groups and the distribution of roles. PowerPoint presentation. Writing reports	Oral discussion Report evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework & Classwork Assignments	During the Semester	10%
2	Quiz 1	The 5th Week	10%
3	Mid-Term Exam	The 9th Week	20%
4	Quiz 2	The 13th Week	10%
5	The Final Examination (Written Test)	The 16-17 th Week	50%
	Total		100

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Follow-up by the head of the department.
- Define 8 office hours per week for each member of the faculty who resides in his office.
- Define 2 hours weekly as Academic guidance for each faculty member for guiding a group of students academically.
- Give guidance so encouraging in assessing the performance of a teacher.
- Creating the means to make the teacher benefit of his time during his stay in office.
- Non-scientific services to assist the teacher to attend office hours.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	1-Bluman, A. G., "Elementary Statistics a Step by Step Approach", 6th Edition, McGraw-Hill, (2006). 2- Larson, R. C. and Farber, E. , " Elementary Statistics: Picturing the World", 3rd Edition, Prentice Hall, (2006).
Essential References Materials	Lecture Larson & Farber, "Elementary Statistics: Picturing the World", 3rd Edition (2006)
Electronic Materials	<ul style="list-style-type: none"> ● https://www.youtube.com/watch?v=fpxaZ9Pv2HM&list=PL9fwy3NUQKwZKOpj354PRgwYPWWgxchnI ● https://en.wikipedia.org/wiki/Abstract_algebra ● https://www.youtube.com/watch?v=4gVA64KIAwY&list=PLp5QO1iuiUkN7KGvBPXUX5gE04fiw5G18 ● https://www.extension.harvard.edu/open-learning-initiative/abstract-algebra
Other Learning Materials	<ul style="list-style-type: none"> ● Microsoft Excel 2007 – 2010 ● Minitab SPSS.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms equipped with smart board and display screen for (40) students
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	-----

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	The teacher using an excel program that measure CLO's	Direct
Quality of learning resources	Students and Program Leaders	Direct
Effectiveness of teaching	Students	Indirect (Questionnaires)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	1- Dr/ Alshaikh.A.A.Shokeralla 2- Dr/ Dr/ Fath Elrhamn Elsmih Guma 3- Dr/ Wala Awad
Reference No.	
Date	



Course Specifications

Course Title:	Differential & Integral (2)
Course Code:	42041223
Program:	B. Sc in Mathematics
Department:	Department of Mathematics
College:	Faculty of Science and Arts in Qilawah
Institution:	AlBaha University



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A. Course Identification

1. Credit hours:	3(2 lectures+2 Exercices)			
2. Course type				
a.	University <input type="checkbox"/>	College <input checked="" type="checkbox"/>	Department <input type="checkbox"/>	Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
3. Level/year at which this course is offered:	3 / year 2			
4. Pre-requisites for this course (if any):	Differential &Integral(1)42041103			
5. Co-requisites for this course (if any):	Differential &Integral(3) 42041220			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended	0	0%
3	E-learning	0	0%
4	Correspondence	0	0%
5	Other	0	0%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	30
4	Others (specify)	0
	Total	60
Other Learning Hours*		
1	Study	0
2	Assignments	0
3	Library	0
4	Projects/Research Essays/Theses	0
5	Others (specify)	0
	Total	0

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description:

Calculus (2) is a branch of mathematics which the student learn the basic concepts methods of integration, theorems and results in Integral calculus(Integral of functions, logarithm function, exponential function, inverse trigonometric function, hyperbolic functions and their inverses, integration methods, improper integrals,, Some applications of integration). Differential & Integral 2 is serves a variety of problems that arise in physics, engineering, chemistry.

Students are introduced to

Indefinite Integral and definite integrals: (Trigonometric, Exponential and Logarithmic Functions and other functions), Basic of Integration Forms.

Integration methods: Some integration by substitution - use Some trigonometric integrals, Integrals involving radicals.

Integration by parts: - Integration by parts - Reduction Formulas -Partial fraction – integrals by special substitution.

The Definite Integral: - Riemann Sum, The Geometric Meaning of Riemann Sum, The Fundamental Theorem of Calculus, Mean Value Theorem for Integral. Properties of Definite Integral

Improper integral: methods of integration, theorems and results in improper Integral.

Some applications of integration: Calculate the area between the curves - sizes rotation - the length of arc –the area of surfaces.

2. Course Main Objective:

- Students learn the basic concepts methods, theorems and results in Integral calculus(Integral of functions, logarithm function, exponential function, inverse trigonometric function, hyperbolic functions and their inverses, integration methods, improper integrals,, Some applications of integration problems.
- To apply the different method of integration for calculate the definite, infinite and improper integral for some functions.
- Identify the maximum and minimum points.
- To understand the basic difference between definite and indefinite integrals.
- Student acquires cognitive skills through thinking and problem solving.
- Student becomes responsible for their own learning through solutions of assignments and time management

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Know the principles of calculus in Integral calculus of transcendental function	K1
1.2	Understanding some the applications of integral	K2
1.3	Learning the student to face the problems related to mathematics in the basic sciences, engineering sciences and computer sciences	K3
2	Skills :	
2.1	Ability of the student to search and learn scientific terms	S1
2.2	Planning for the application by using the mathematical approach	S2
2.3	The ability to collect and arrange information and display to solve problems The ability to comparison and analysis of mathematical results.	S3

CLOs		Aligned PLOs
2.4	Using the means of illustrations, whether with computer or models.	S4
3	Competence:	
3.1	Communicates effectively in oral and written form in educational situations related to the subjects of the course	C1
3.2	Take responsibility for own learning and professional development	C2
3.3	Work effectively in groups and exercise leadership when appropriate.	C3

C. Course Content

No	List of Topics	Contact Hours
1	Indefinite Integral and definite integrals: Basic of Integration Forms ((Trigonometric, Exponential and Logarithmic Functions and other functions)),	8
2	Integration methods: Some integration by substitution - use Some trigonometric integrals, Integrals involving radicals..	8
3	Integration by parts - Integration by parts - Reduction Formulas -Partial fraction – integrals by special substitution. .	12
4	The Definite Integral: - Riemann Sum, The Geometric Meaning of Riemann Sum, The Fundamental Theorem of Calculus, Mean Value Theorem for Integral. Properties of Definite Integral	12
5	improper integrals: methods of integration, theorems and results in improper Integral	8
6	Some applications of integration: Calculate the area between the curves - sizes rotation - the length of arc –the area of surfaces.	12
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Know the principles of calculus in Integral calculus of transcendental function	<ul style="list-style-type: none"> - The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved collectively or individually. - Provide a short research collective or individual. - Research 	<ul style="list-style-type: none"> - Discussion in lectures. - Follow-up in the practical lessons and correct test. - Homework assignments. - Solve Problems - Achievement tests. (Periodic tests – Midterm tests - final exams). s.
1.2	Understanding some the applications of integral	<ul style="list-style-type: none"> - The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved 	<ul style="list-style-type: none"> - Discussion in lectures. - Follow-up in the practical lessons and correct test.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		<ul style="list-style-type: none"> collectively or individually. - Provide a short research collective or individual. - Research 	<ul style="list-style-type: none"> - Homework assignments. - Solve Problems - Achievement tests. (Periodic tests – Midterm tests – final exams). s.
1.3	Learning the student to face the problems related to mathematics in the basic sciences, engineering sciences and computer sciences	<ul style="list-style-type: none"> - The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved collectively or individually. - Provide a short research collective or individual. - Research 	Midterm & final exam Quiz1 & Quiz2
2.0	Skills		
2.1	Ability of the student to search and learn scientific terms	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).
2.2	Planning for the application by using the mathematical approach	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).
2.3	The ability to collect and arrange information and display to solve problems The ability to comparison and analysis of mathematical results	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).
3.0	Competence		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Communicates effectively in oral and written form in educational situations related to the subjects of the course	Team work- Assignments-student presentation-reporting- Scientific media Co-operative & Individual assignments. Cooperative Learning.	Evaluation of individual & group works. Observation
3.2	Take responsibility for own learning and professional development	Working in small groups Group research	Evaluation of individual & group works.
3.3	Work effectively in groups and exercise leadership when appropriate.	Team work. small groups and the distribution of roles. PowerPoint presentation. Writing reports.	Oral discussion Report evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Assignments	During the semester	10%
2	Quiz 1	The 5 week	10%
3	Mid-Term Exam	The 9 th week	20%
4	Quiz 1	The 13 week	10%
5	Final Exam	The 16 th week	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	[1] H. Anton, I. Bivens, and S. Davis. Calculus, 8th Edition. John Wiley and Sons, 2005. [2] James Stewart. Calculus Early Transcendentals, 5th edition. Thomson, 2003. [3] R. Larson, R. Hostetler, and B. Edwards. Calculus, 7th edition . Houghton Mifflin Company, 2002. [3] H. Anton. Calculus, 7th Edition. John Wiley and Sons, 2002.
Essential References Materials	[1] E. Swokowski, M. Olinic, and D. Pence Calculus, 6th Edition. PWS Publishing Company, 1994- ISBN-10: 0534936245. [2] E. Swokowski, M. Olinic, and D. Pence Calculus, 6th Edition. PWS Publishing Company, 1994

Electronic Materials	https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx
Other Learning Materials	- CD-ROM containing the scientific subjects in the course

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms equipped with smart board and display screen for (30) students
Technology Resources (AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	The teacher using an excel program that measure CLO's	Direct
Quality of learning resources	Students and Program Leaders	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	1. Dr. Saber Ali Kharrati
Reference No.	
Date	