Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Description of the academic program and curriculum for undergraduate studies in the Department of Mathematics

DEPARTMENT OF MATHEMATICS
COLLEGE OF BASIC EDUCATION

University of Babylon
College of Basic Education
Department of Mathematics
2025-2026

PREPARED AND DESIGNED BY ASST. PROF. MAYSOON KHAZAAL ABBAS MAAROOF

the introduction :

The Department of Mathematics at the College of Basic Education is a cornerstone of the academic and educational system, established to prepare specialized educators capable of raising the standard of basic education in society. The department's academic program aligns with the college's mission and strategic objectives of developing teachers equipped with a comprehensive foundation of in-depth mathematical knowledge, modern pedagogical skills, and firmly established professional values, enabling them to effectively contribute to the development of future generations.

The academic program is based on combining specialized scientific knowledge with applied educational learning. Throughout their studies, students take specialized courses in major branches of mathematics such as algebra, mathematical analysis, geometry, statistics, and applied mathematics, in addition to educational and psychological courses that enhance their understanding of teaching methods, educational assessment tools, and learner characteristics. This integration aims to enable students to apply theoretical knowledge in practical settings within the educational environment..

The program also aims to achieve clear learning outcomes that ensure students acquire the ability to interpret mathematical concepts and theories, utilize modern educational technologies in teaching, develop critical thinking and problem-solving skills, and instill ethical and professional values. This is reinforced through field training, which is a central component of the program, providing students with practical opportunities to interact with the educational landscape and apply their acquired knowledge and skills in the field..

Believing in the importance of mathematics as a tool for developing scientific thinking and societal progress, the academic program in the Department of Mathematics contributes to preparing graduates capable of keeping pace with scientific and technological advancements and actively contributing to curriculum development and enhancing the efficiency of the educational process. Therefore, this program represents a valuable addition to the educational system and supports the College of Basic Education's mission to serve the community and build a solid scientific foundation for future generations.

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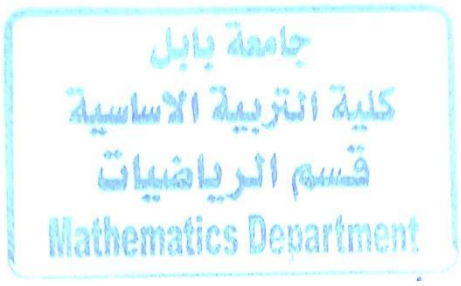
College of Basic Education / Department of Mathematics

University of Babylon	University name
College of Basic Education	College
Department of Mathematics	Scientific Department
Bachelor's	Name of academic or professional program
Bachelor of Basic Education, Department of Mathematics	Name of final certificate
quarterly	The study system
Courses and syllabi according to the Ministry	Accredited Program
Application in educational institutions	Other external influences
2/1/2026	Date of preparation of description
2/1/2026	Date the file was filled

:



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Abbas Maaroof

College of Basic Education / Department of Mathematics

Academic Program Description

University Name: University of Babylon
College Name: College of Basic Education
Department Name: Department of Mathematics
Name of the professional academic program: Bachelor of Science in Mathematics
Final Certificate Name: Bachelor of Mathematics
Academic system: Semester-based
Description prepared on: 2/1/2026
File completed on: 2/1/2026

Signature:
Scientific Assistant: Prof. Dr. Aref Hatem Hadi
Date: 2/1/2026

Signature:
Name of Department Head:
Asst.Prof.Dr. Laheeb Ibrahim Zeidan
Date: 2/1/2026

جامعة بابل
كلية التربية الاساسية
قسم الرياضيات
Mathematics Department

The file was reviewed by a quality
Division a guarantee Quality and performance
University
Manager's name Division a guarantee Quality and performance University:Prof. Dr. Ibtisam Sahib Musa,
Date: 2/1/2026
the signature

Representative from the mathematics department.
Asst. Prof. Maysoon Khazaal Abbas

كلية التربية الاساسية
شعبة ضمان الجودة
والاداء الجامعي

Dean's approval

Prof. Dr. Ali Jabbar Abdullah Al-Juhayshi

Date: 2/1/2026

College of Basic Education / Department of Mathematics

1. Program Vision

Excellence in preparing and qualifying mathematics teachers pedagogically and scientifically in line with modern scientific and educational developments..

2. Program Message

Preparing qualified teachers inmathematicsThey possess solid scientific knowledge and modern educational skills, which enhances the quality of basic education and contributes to serving the community.Preparing specialized mathematics teachers with solid knowledge, advanced teaching skills, and strong professional values, capable of contributing to the development of basic education and serving the community..

3. Program Objectives

1. To provide students with basic and advanced knowledge in the various branches of mathematics.

2. Equipping students with educational and technical skills that enhance their ability to teach effectively.
3. Developing students' abilities in critical thinking, problem-solving, and applying mathematics in practical life.
4. Establishing professional and educational values and promoting commitment to the ethics of the teaching profession.
5. Developing scientific attitudes among students in the department and motivating them to complete their postgraduate studies in their field of specialization.
6. Activating the use of modern technology in the department, including educational technologies and others.
7. Using computers and artificial intelligence software to help students develop their talents.

4. Program accreditation

It was completedpresentationApplication for accreditation pendingApproval

5. Other external influences

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market the job, Visits The process and Field For circles Government primary schools and Other institutes

-

6. Program Structure				
Notes	**Percentage**	**Study unit**	**Number of courses**	**Program structure**
	%25	**26**	**13**	**Institutional requirements**
	%23	**33**	**12**	**College requirements**
Core course	**%52**	**70**	**27**	**Department requirements**
			Work is underway on it	**Summer training**
			Sports activities	**Other**
	100%	**129**	**52**	**the total**

7. Program Description					
Credit Hours		**Course name**	**Course code**	**Year / Level**	
practical	**theoretical**				
0	**2**	**Democracy and rightsman**	**BEMADEM100**	**StageFirst**	**semesterthe first**
2	**1**	**computer**	**BEMACOM101**		
0	**3**	**Developmental psychology**	**BEMAPSY102**		
2	**2**	**Differentiation**	**BEMACAL103**		
0	**2**	**Probabilistic principles**	**BEMAPRI104**		
2	**2**	**FoundationsMathematics 1**	**BEMAFOU105**		
0	**2**	**theorypreparation**	**BEMANUM106**		

6	14	Total

Credit Hours		Course name	Course code	Year / Level	
practical	theoretical				
0	2	Arabic	BEMAARA107	First stage	Second semester
0	2	English language	BEMAENG108		
0	3	Principles of Education	BEMAORI109		
0	2	Islamic Education/Civilization	BEMAISL110		
2	1	Computer Science (My Specialty)	BEMACOMS111		
2	1	Foundations of Mathematics 2	BEMAFOU(2)112		
0	2	matrices	BEMAMATR113		
2	2	integration	BEMAINT114		
6	15	Total			

	First semester				
Credit Hours		Course name	Course code	Year / Level	
practical	theoretical				
0	2	Arabic	BEMAARA201	Phase Two	First semester
0	2	English language	BEMAENG202		
0	2	Crimes of the Ba'ath regime in Iraq	BEMACRIM203		
2	1	Curricula and textbooks	BEMACUR204		

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2	2	Advanced differentiation	BEMACAL205		
2	1	Advanced possibilities	BEMAPRO206		
2	2	linear algebra	BEMALALG207		
8	12		Total		

semesterthe second				
Credit Hours		Course name	Course code	Year / Level
practical	theoretical			
2	1	computer	BEMACOM208	StageSecond
2	2	psychologyTeaching classroom thinking	BEMAPSY209	
0	2	Educational Psychology	BEMAEPSY210	
2	2	Advanced integration	BEMAINT211	
0	3	Engineering	BEMAGEO212	
2	1	Specialized computer	BEMACOMS213	
0	2	Mathematical thinking	BEMATHI214	
0	2	Data theory	BEMADATA215	
8	15	Total		

semesterthe first				
Credit Hours		Course NameorCourse	Course codeorCourse	Year / Level
practical	theoretical			practical
2	2	General teaching methods and their applications	BEMATEA301	StageThird

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0	2	Specialized computer	BEMACOM310	
0	2	Mathematical thinking	BEMATHI311	
0	3	Data theory	BEMAGRA313	
2	2	countadvanced	BEMASTA305	
2	2	Differential equations	BEMAODE306	
2	1	Group theory	BEMAGRO307	
1	2	Educational research methodology	BEMAMETH315	
9	16	Total		

Second semester				
Credit Hours		Course name	Course code	Year / Level
practical	theoretical			
0	2	sustainable development	BEMASUS308	Phase Three
0	2	Arabic	BEMAARA317	
1	2	Specialized teaching methods	BEMAMETH315	
2	1	Mathematical analysis	BEMAANA311	
2	1	Ring theory	BEMARING312	
2	2	numerical analysis	BEMANUME313	
0	2	English language	BEMAENG319	
0	2	Curricula and textbooks	BEMABOO302	
6	14	Total		

semesterthe first				
Credit Hours		Course NameorCourse	Course codeorCourse	Year / Level
practical	theoretical			

0	2	Environment and Health	BEMAENV401	StageFourth
2	2	Specialized teaching methods	BEMASPE402	
0	2	literatureArab	BEMALIT403	
0	2	EthicsProfession	BEMAETH404	
4	1	Practical observational education	BEMAPRA405	
2	1	Linear programming	BEMALIP406	
2	2	topology	BEMATOP407	
2	2	Doctrinal analysis	BEMACOX408	
2	1	Artificial intelligence computers	BEMAART409	
2	0	Graduation research project	BEMAPROJ410	
16	15	Total		

Second semester				
Credit Hours		Course name	Course code	Year / Level
practical	theoretical			
1		Graduation research project	BEMAPROJ411	Phase Four
12		Practical training (application)	BEMAAPP412	
13		Total		

8. Expected learning outcomes of the program	
A.Knowledge	
Learning outcomes	Learning outcomes
explanationHe understands and applies basic mathematical concepts and theories in educational and life	A-1.It explains the basic concepts and principles in the main branches of mathematics.. A-2.It explains the educational and psychological theories

situations.	**and concepts related to mathematics education.** **A-3.It explains the role of mathematics in solving scientific and everyday problems..** **A-4.It describes the foundations and methods of scientific research in the educational field.**
for.Skills	
Learning outcomes	**Learning outcomes**
employmentThe student learns effective teaching strategies and modern techniques in mathematics education.	B-1.It employs analytical and logical skills in solving ةmathematical problems. B-2. Uses modern technological tools and software in teaching mathematics. B-3. Designs study plans and educational activities that take into account students' levels.. B-4.He analyzes statistical data and presents the results in a scientific manner.
C.Values	
Learning outcomes	**Learning outcomes**
Commitment toEducational ethics andshowProfessional responsibility towards the teaching professionm	C-1. He adheres to the ethics and values of the educational profession.**A** C-2.**The spirit of cooperation and teamwork is evident ةwithin the educational environment.** C-3. Appreciates mathematics as a tool for developing critical ةand logical thinking. C-4 Develops self-learning skills and continuous professional development.

Teaching and learning strategies9	
strategicallyTLearning	**Education strategies**
Dividing students into small groups to work	**Cooperative learning**Dividing students into

together on solving math problems encourages them to exchange ideas and develop communication skills.. Students can exchange specialized lessons with each other, promoting mutual learning.. **Sports software :**like Geo Gebra **and Matlab** To represent geometric and graphical ideas. **Online lessons and videos**For example, using platforms like Khan Academy and YouTube to visually explain lessons. Interactive applications: Using applications that allow students to interact with concepts such as graphing and solving equations.	small groups to solve problems and discuss mathematical ideas. **brainstorming**Encouraging students to propose multiple solutions to a single problem. **Project-based learning**Assigning students mathematical projects related to daily life, such as statistics or mathematical models. **Sports software**Examples include GeoGebra, MATLAB, or Wolfram Alpha for displaying graphs and equations. **blended learning**Combining in-person and online education through educational platforms. **Simulation**Using applications that simulate mathematical phenomena (such as probability or statistics).
10. Evaluation	
monthly and term written exams (Quizzes) Quick exams Homework	

11. Faculty

Faculty members

Faculty numbers		Special requirements/skills (if any)	Specialization		academic rank	Name	T
lecturer	staff		private	general			
	staff		Methods of teaching mathematics	mathematics	Prof	Prof. Dr. Saeed Hussein Ali Al-Thalab	1
	staff		Applied Mathematics	mathematics	Prof	Prof. Dr. Uday Sabri Abdul Razzaq	2
	staff		General teaching methods	mathematics	Prof	Prof. Dr. Nasreen Hamza Abbas	3
	staff		Arabic teaching methods	Arabic	Prof	Prof .Wisal Mu'ayyad Khudair	4
	staff		Applied Mathematics	Sciences mathematics	Asst.Prof	Asst.Prof. Dr. Laheeb Ibrahim Zeidan	5
	staff		Applied Mathematics	mathematics	Asst.Prof	Asst.Prof. Dr .Sakina Abdullah Lilo	6
	staff		Contractual analysis	breeding mathematics	Asst.Prof	Asst.Prof. Dr. Sarah Abdul-Redha Rahman	7
	staff		Applied Mathematics	mathematics	Asst.Prof	Asst.Prof. Abdul Hamid Qahtan Aboud	8
	staff		information technology	information technology	Asst.Prof	Asst.Prof. Maysoon Khazaal Abbas Maaroof	9
	staff		Artificial intelligence	Computer	Asst.Prof	Asst.Prof .Sabreen Ali Hussein	10
	staff		Linear algebra	mathe	lecturer	lect.Dr.Karim Abbas Layth	11

			mathematics	matics			
	staff		Applied Mathematics	mathematics	lecturer	Dr. Abdullah Yahya Jassim	12
	staff		Dynamic systems	mathematics	lecturer	Dr. Muhammad Kadhim Muhsin	13
	staff		Curricula and teaching methods	Curricula and teaching methods	lecturer	Dr. Haider Kadhim Aboud	14
	staff		networks	Computer	lecturer	Lect. Awfa Hassan Dakhil	15
	staff		Image processing	Computer	lecturer	Lect. Wissam Lahmoud Nadous	16
	staff		networks	information technology	lecturer	Lect. Shaimaa Abdul Hussein Shnein	17
	staff		Applied Mathematics	sciencesmathematics	Lecturer	Lect. Muhammad Qasim Taban	18
	staff		Statement theory	breedingmathematics	Assistant lecturer	Asst. lect. Sarah Nahed Abdel Abbas	19
	staff		mathematicsApplied	sciencesmathematics	Assistant lecturer	Asst. lect. Sahab Mohsen Aboud	20
	Staff		Methods of teaching Arabic	teaching methods	Assistant lecturer	Asst. lect. Sarah Hussein Abdul Aoun	21
	staff		Zumr	mathe	Assistant	Asst. lect. Abdullah	22

				matics	lecturer	Hamad Salman	
	staff		Communications systems and computer networks	Computer	Assistant lecturer	Asst. lect. Firas Abdul KadhimMohammed	23
	staff		General Mathematics	mathematics	Assistant lecturer	Asst. lect. Muhammad Amer Shniour	24
	staff		networks	Information Technology	Assistant lecturer	Asst. lect. Dalia Abdel Rahim Mukhif	25
	staff		topology	breedingmathematics	Assistant lecturer	Asst. lect. Muhammad Majid Najm	26
	Staff		Reliability	breedingmathematics	Assistant lecturer	Asst. lect. Ghufran Aziz Mazhar	27
	staff		Statement theory	Mathematics Education	Assistant lecturer	Asst. lect. Manar Makki Shaalan	28
	staff		teaching methodsgeography	Social	Assistant lecturer	Asst. lect. Dalia Abdel Rahim Mardan	29
	staff		mathematics	Mathematics Education	Assistant lecturer	Asst. lect. Huda Saleh Hamza	30
	Staff		Calculators	Computer Engineering	Assistant lecturer	Asst. lect. Muhammad Yusuf	31

12. Professional Development
Orientation of new faculty members
The orientation program for new members aims to integrate them quickly and effectively into the academic environment and ensure their understanding of the college's policies and procedures. The orientation program includes the following: 1.Introducing new teachers to department policies, such as how grades are recorded, assessment procedures, and how to handle academic complaints or inquiries. 2.Introducing them to technological tools, libraries, and any available academic support such as educational aids or training courses. 3.Guidance on how to present research or scientific projects, and how to deal with academic challenges and future professional development.to 4.Guiding them to use mathematical problems derived from reality, such as using statistics to analyze everyday life data or using Engineering To design realistic models. 5.Organizing meetings with senior faculty members to exchange experiences and knowledge.
Professional DevelopmentFor membersFaculty
Continuing professional development aims to enhance the competence of faculty members and improve the quality of teaching and scientific research. It includes the following: 1.Providing workshops to teach scientific research skills, such as writing research papers, presenting at conferences, and publishing in academic journals. 2.Introducing faculty members to advanced aspects of mathematics such as artificial intelligence, data analysis, and mathematical applications in other sciences. 3. Encourage faculty members to join interdisciplinary research teams with other departments. These activities can enhance the development of scientific research skills and a deeper understanding of other subjects. Providing training programs in the use of modern technology and educational tools. 4 Using peer feedback to improve teaching methods, through classroom observations or joint workshops.5

13. Admission Criteria
Central acceptance

14. Key sources of information about the program
• Ministry of Higher Education and Scientific Research • Councils of Colleges of Basic Education in Iraq • Arab and international colleges of basic education

15. Program Development Plan
1The use of modern technologies such as digital simulation and multimedia aims to improve the quality of teaching and learning, and enhance the efficiency of faculty members. 2.Providing an advanced educational environment that keeps pace with changes in science and

technology.

3.This plan will improve the curriculum, assessment, and use of technology.

4Enhancing students' mathematics skills.

5.Analysis of the current program

- Curriculum reviewStudying the current curriculum and identifying aspects that need updating or modification based on student needs and modern trends in mathematics.
- Analysis of learning outcomesEvaluating the extent to which the educational objectives of the course have been achieved based on student results and faculty performance.
- Student and faculty surveysConducting surveys and interviews to gather feedback on the curriculum from students and faculty members.

6.Identifying development needs, promoting scientific research and student projects

- Focus on weak areasIdentifying the topics or areas in which students need additional support.
- Identifying recent developmentsIdentifying scientific developments in mathematics that should be included in the curriculum (such as artificial intelligence, data analysis, applied mathematics))

7.Review and update of courses

- Course content developmentUpdating the curriculum to include modern concepts in mathematics such as machine learning, applied mathematics, financial mathematics, and big data.
- Flexibility in the curriculumProviding flexible educational pathways that allow students to choose specialized fields according to their interests (such as theoretical mathematics, applied mathematics, or engineering mathematics).
- New coursesAdding new courses that keep pace with modern developments in mathematics.

College of Basic Education / Department of Mathematics

Program skills chart

Learning outcomes required from the program															
Values				Skills				Knowledge				Essential or optional	Course Name	Course code	YearLevel
4J	3J	2J	1J	4b	3b	2b	1b	4a	3a	2a	1a				
*		*	*	*				*				essential	Democracy and human rights	BEMADEM100	
*	*				*	*		*	*			essential	computer	BEMACOM101	
*		*	*	*	*	*		*		*		essential	Developmental psychology	BEMAPSY102	
*	*			*		*	*	*	*		*	essential	Differentiation	BEMACAL103	
*	*			*		*	*	*	*		*	essential	Probabilistic principles	BEMAPRI104	
*	*			*		*	*	*	*		*	essential	Foundations of Mathematics 1	BEMAFOU105	**First**
*	*			*		*	*	*	*		*	essential	Number theory	BEMANUM106	**First semester**
*		*	*	*		*				*		essential	Arabic	BEMAARA107	**First**
*		*	*	*		*				*		essential	English language	BEMAENG108	**Second semester**

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*		*	*	*	*	*		*		*		essential	Principles of Education	BEMAORI109	
*		*	*	*		*				*		essential	Islamic Education/Civilization	BEMAISL110	
*	*				*	*		*	*			essential	Computer Science (My Specialty)	BEMACOMS111	
*	*			*		*	*	*	*		*	essential	Foundations of Mathematics 2	BEMAFOU(2)112	
*	*			*		*	*	*	*		*	essential	matrices	BEMAMATR113	
*	*			*		*	*	*	*		*	essential	integration	BEMAINT114	
*		*	*	*		*				*		essential	Arabic	BEMAARA201	
*		*	*	*		*				*		essential	English language	BEMAENG202	
*		*	*	*		*				*		essential	Crimes of the Ba'ath regime in Iraq	BEMACRIM203	
*		*	*	*	*	*		*		*		essential	Curricula and textbooks	BEMACUR204	**Second**
															First semester

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*	*			*		*	*	*	*		*	essential	Advanced possibilities	BEMAPRO206	
*	*			*		*	*	*	*		*	essential	linear algebra	BEMALALG207	
*	*				*	*		*	*			essential	computer	BEMACOM208	
*		*	*	*	*	*		*		*		essential	Psychology of teaching classroom thinking	BEMAPSY209	
*		*	*	*	*	*		*		*		essential	Educational Psychology	BEMAEPSY210	**Second** **Second semester**
*		*	*	*		*		*		*	*	essential	Advanced integration	BEMAINT211	
*		*	*	*		*		*		*	*	essential	Engineering	BEMAGEO212	
*		*	*	*		*		*		*	*	essential	Specialized computer	BEMACOMS213	
*		*	*	*		*		*		*	*	essential	Mathematical thinking	BEMATHI214	
*		*	*	*		*		*		*	*	essential	Data theory	BEMADATA215	
*		*	*	*	*	*		*		*		essential	General teaching methods and their	BEMATEA301	

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													applications	
*		*	*	*	*	*		*		*		essential	Guidance and education for people with special needs	BEMAGUI302	
*		*	*	*	*	*		*		*		essential	Measurement and evaluation	BEMAMEA303	
*		*	*	*	*	*		*		*		essential	Educational leadership and management	BEMALEA304	
*		*	*	*		*		*		*	*	essential	Advanced statistics	BEMASTA305	
*		*	*	*		*		*		*	*	essential	Differential equations	BEMAODE306	
*		*	*	*		*		*		*	*	essential	Group theory	BEMAGRO307	
*		*	*	*	*	*		*		*		essential	sustainable development	BEMASUS308	
*		*	*	*	*	*		*		*		essential	Action research methodology	BEMAMETH310	**Third**
*		*	*	*	*	*		*		*		essential	Educational technology and its applications	BEMATECH309	**Second semester**

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*		*	*	*		*		*		*	*	essential	Mathematical analysis	BEMAANA311	
*		*	*	*		*		*		*	*	essential	Ring theory	BEMARING312	
*		*	*	*		*		*		*	*	essential	numerical analysis	BEMANUME313	
*		*	*	*		*		*		*	*	essential	Specialized computer	BEMACOM314	
*		*	*	*	*	*		*		*		essential	Environment and Health	BEMAENV401	
*		*	*	*	*	*		*		*		essential	Specialized teaching methods	BEMASPE402	
*		*	*	*	*	*		*		*		essential	Arabic literature	BEMALIT403	
*		*	*	*	*	*		*		*		essential	Professional ethics	BEMAETH404	
*		*	*	*	*	*		*		*	*	essential	Practical observational education	BEMAPRA405	**Fourth**
*		*	*	*		*		*		*	*	essential	Linear programming	BEMALIP406	**First semester**

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*		*	*	*		*		*		*	*	essential	topology	BEMATOP407	
*		*	*	*		*		*		*	*	essential	Doctrinal analysis	BEMACOX408	
*		*	*	*		*		*		*	*	essential	Artificial intelligence computers	BEMAART409	
*		*	*	*	*	*		*		*	*	essential	Graduation research project	BEMAPROJ410	
*		*	*	*	*	*		*		*	*	essential	Graduation research project	BEMAPROJ411	**Fourth**
*		*	*	*	*	*		*		*	*	essential	Practical Education Application	BEMAAPP412	**Second semester**

*Please check the boxes corresponding to the individual learning outcomes from the program that are being assessed.

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Abbas Maaroof

Ministry of Higher Education
Scientific Research
Scientific Supervision and
Evaluation Authority
Department of Quality
Assurance and Academic
Accreditation Section

Course Description Guide

Mathematics Department

٢٠٢٥ -٢٠٢٦

Course Description Form

1. Course Name: Advanced Calculus

2. Course Code: BEMAINT211

3. Semester / Year: 2025, First semester

4. Description Preparation Date: 15-8-2026

5. Available Attendance Forms: Present

6. Number of Credit Hours (Total) / Number of Units (Total)= 60

7. Course administrator's name (mention all, if more than one name) Dr. Sukaina Al-Bairmani / Email: sukaina.albairmani@uobayylon.edu.iq

8. Course Objectives

Course Objectives	1. That the student be able to diagnose the importance of advanced differential and its applications. 2. This course aims to generalize the concepts of functions with one variable to functions with several variables, while identifying the different applications. 3. Identifying the concepts of Cartesian, cylindrical and spherical coordinates - functions in two variables - functions in three variables - ends - continuity - partial derivation - chain law - maximum values, functions in two variables - Lagrange factors. 4. Infinite series sequences - Convergence tests - representation of functions by power series - Taylor series - Maclaurin and binomial.

9. Teaching and Learning Strategies

Strategy	1. Paper lecture 2. Reports on results

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	**Sequences and**		Lecture and	Short

		Infinite Series.		discussion	questions Quiz
2	4	**The Integral, Ratio, Root and Comparison Tests.**		Lecture and discussion	Short questions
3	4	**Alternating Series, Absolute and Conditional Convergence.**		Lecture and discussion	Quiz
4	4	**Power, Taylor, Fourier and Maclaurin Series.**		Lecture and discussion	Short questions
5	4	**Convergence of Taylor Series; Error Estimates.**		Lecture and discussion	Quiz
6	4	**Functions of Several Variables**		Lecture and discussion	Short questions
7	4	**Limits and Continuity in Higher Dimensions**		Lecture and discussion	Quiz
8	4	**Partial Derivatives**		Lecture and discussion	Short questions
9	4	**The Chain Rule**		Lecture and discussion	Quiz
10	4	**Tangent Planes and Differentials**		Lecture and discussion	Short questions
11	4	**Extreme Values and Saddle Points**		Lecture and discussion	Quiz
12	4	**Lagrange Multipliers**		Lecture and discussion	Short questions
13	4	**Partial Derivatives with Constrained Variables**		Lecture and discussion	Quiz
14	4	**Taylor's Formula for Two Variables**		Lecture and discussion	Short questions
15		**Tangent Planes and Differentials**		Lecture and discussion	Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1- George_B._Thomas,_Maurice_D._Weir,_Joel_ Hass,_Fra(b-ok.xyz), 11th,2005.

2- H. Anton, Calculus with analytical Geometry, 4th edition, John Wiley & sons, New York, 1992.

3- Thomas. G. B., Calculus and Analytic Geometry, 4th , 1984.

4- Durfee. W.H, Calculus and Analytic Geometric, New York, 1971.

5- Dovermann. K.H, Applied Calculus math215 , 1999.

Course Description Form

1. Course Name: Advanced Integration
2. Course Code: BEMAINT211
3. Semester / Year: 2026, second semester
4. Description Preparation Date: 15-01-2026
5. Available Attendance Forms: Present
6. Number of Credit Hours (Total) / Number of Units (Total)= 4/3
7. Course administrator's name (mention all, if more than one name) Dr. Sukaina Al-Bairmani / Email: sukaina.albairmani@uobayylon.edu.iq
8. Course Objectives

Course Objectives	That the student be able to identify cylindrical and spherical coordinates - functions in two variables - functions in three variables - binary integration and its applications - binary integration in polar coordinates - triple integration and its applications - triple integration in cylindrical and spherical coordinates - infinite sequences and series - convergence tests Representation of functions by series Powers - Taylor - Maclaurin and Binomial Series.

9. Teaching and Learning Strategies

Strategy	3. Paper lecture 4. Reports on results

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	**Functions of Several Variables**		Lecture and discussion	Short questions Quiz
2	4	**Double Integrals**		Lecture and discussion	Short questions
3	4	**Area, Moments, and Centers of Mass**		Lecture and discussion	Quiz
4	4	**Polar coordinates Polar coordinates**		Lecture and discussion	Short questions
5	4	**Double Integrals in Polar Form**		Lecture and	Quiz
6	4	**Triple Integrals in Rectangular Coordinates**			Short questions
7	4	**Cylindrical and Spherical Coordinates**			Quiz
8	4	**Triple Integrals in Cylindrical and Spherical Coordinates**		Lecture and discussion	Short questions
9	4	**Substitutions in Multiple Integrals**		Lecture and discussion	Quiz
10	4	**Sequences and Infinite Series**		Lecture and discussion	Short questions
11	4	**Comparison Tests, Ratio and Root Test**		Lecture and discussion	Quiz
12	4	**Alternating Series Absolute and Conditional Convergence**		Lecture and discussion	Short questions

13	4	**Power Series, Taylor and Maclaurin Series**		Lecture and discussion	Quiz
14	4	**Convergence of Taylor Series; Error Estimates**		Lecture and discussion	Short questions
15		**Applications of Power Series and Fourier Series**		Lecture and discussion	Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1-George_B._Thomas,_Maurice_D._Weir,_Joel_

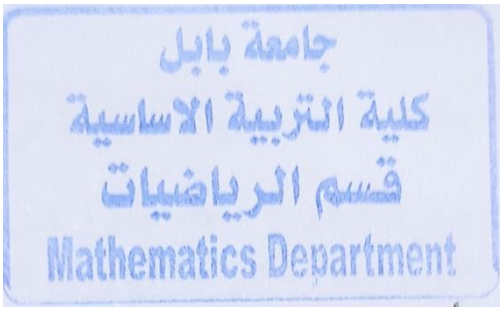
Hass,_Fra(b-ok.xyz), 11th,2005.

2-H. Anton, Calculus with analytical Geometry , 4th edition, John Wiley & sons, New York, 1992.

3- Thomas. G. B., Calculus and Analytic Geomatry, 4th , 1984.
4- Durfee. W.H, Calculus and Analytic Geometric, New York, 1971.
5- Dovermann. K.H, Applied Calculus math215 , 1999.

Description Form

1. Course Name:	
Graph theory	
2. Course Code:	
3. Semester / Year:	
First semester of the year 20٢٥-202٦	
4. Description Preparation Date:	
202٥-9-1٥	
5. Available Attendance Forms:	
1. My presence in the halls 2. Google meet program	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total number of study hours (3) Total number of units (3)	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant teacher Manar Makki Shaalan Email: bsclec.manar.mackie@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	This course aims to enable students to: 1. Understand the fundamental concepts of graph theory and its mathematical structure. 2. Identify data types and their basic properties. 3. Analyze the relationships between vertices and

	loops in directed and undirected data. 4. Apply basic data operations (addition, completion, and joining). 5. Study paths, connections, and trees, and their properties. 6. Understand the concept of symmetry and data coloring, and their applications. 7. Represent data using different matrices. .8. Develop students' logical reasoning and mathematical analysis skills.

9. Teaching and Learning Strategies

Strategy	• Discussion Strategy • Presentation Strategy • Exploration Strategy • E-Learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	method Evaluation
١	4	The student should know the topological space with general concepts	Definition of statement, level of statement, size of statement	Presentation + Discussion	Asking intellectual questions
٢	4	The student should know the open and closed sets	Vertices and loops in trend data: definition of vertices and loops and the relationship between them	Presentation + Discussion	Asking intellectual questions

٣	4	The student should know the neighborhoods and prove the most important properties	The handshake theorem, operations on data (add, complement, join, partial data)	Presentation + Discussion	Asking intellectual questions
٤	4	The student should know the base and its types	The handshake theorem, operations on data (add, complement, join, partial data)	Presentation + Discussion	Asking intellectual questions
٥	4	Distinguish between the base and the sub-base	Some special types of data	Presentation + Discussion	Asking intellectual questions
٦	4	Know the points and prove their most important properties	Paths and connection (basic and simple paths), the Ollerian and Hamiltonian statement.	Presentation + Discussion	Asking intellectual questions
٧	First month exam				
٨	4	Know the points and prove their most important properties	Data structure, the concept of data symmetry	Presentation + Discussion	Asking intellectual questions
٩	4	Know the points and prove their most important properties	The concept of data symmetry	Presentation + Discussion	Asking intellectual questions
١٠	4	Know the continuous functions, open functions and closed functions	Trees, their characteristics, and some of their main types.	Presentation + Discussion	Asking intellectual questions
١١	4	Distinguish between the connected and disconnected set	The color number, the four-color theorem, and its applications.	Presentation + Discussion	Asking intellectual questions
١٢	4	Know the continuity, connected and component	Data representation matrices, adjacency matrix	Presentation + Discussion	Asking intellectual questions
١٣	4	Know compact spaces	Fall matrix of heads	Presentation + Discussion	Asking intellectual questions
١٤	4	Distinguish between spaces	Fall matrix for edges, trajectory matrix	Presentation + Discussion	Asking intellectual questions
١٥	Second month exam				

١١Course Evaluation
The grade is distributed out of ٤٠ according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, and represents the annual effort for the subject. The final exam is out of (٦0 points), and thus the final grade is out of (100).
١٢Learning and teaching resources
• Lectures by the instructor • General Topology by T. Long (1986) • General Topology (Dr. Samir Bashir Al-Hadid), General Topology (Dr. Oraibi Al-Zubaidi and Ataallah Thamer Al-Ani) • General Topology by Willard - Introduction to General Topology • Electronic references from the internet

1. Course Name: Mathematical Analysis
2. Course Code:
3. Semester / Year: Second
4. Description Preparation Date: 1-2-2026
5. Available Attendance Forms: Weakly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name:Abdulhameed Qahtan Abbood Altai Email: abdul.hameed@uobabylon.edu.iq
8. Course Objectives

Course Objectives	
9. Teaching and Learning Strategies	
Strategy	Weekly lectures + assignments + quizzes

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation

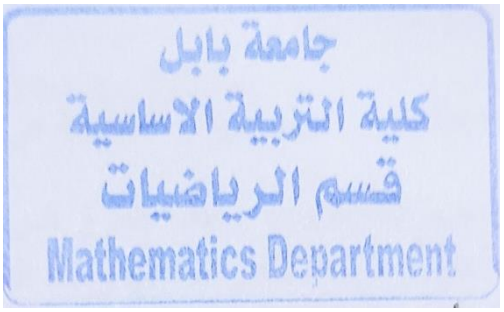
		Outcomes			method
First	3	The student should know the real numbers and be able to solve practical problems involving the upper limit, lower limit, largest lower limit, and smallest upper limit.	Real numbers, order field, upper bound, lower bound, supremum, infimum	Lecture and discussion method	Short questions
Second	3	The student should understand the relationship between real numbers and rational numbers.	Relationship between real numbers and rational numbers	Lecture and discussion method	Short questions
Third	3	The student should know Archimedes' property and how to use it in solving problems.	Archimedes' property, the set of real numbers, a fully sorted field	Lecture and discussion method	Short questions
Fourth	3	The student should understand metric space, topological concepts, and solve practical problems related to them.	Metric space, topological concepts	Lecture and discussion method	Short questions
Fifth	3	The student should be able to identify convergent, bounded, and fundamental sequences in metric space and the relationship between them.	Convergent, bounded, and fundamental sequences in metric space and the relationship between them	Lecture and discussion method	Short questions
Sixth	3	First exam	Testing the student on topics studied in previous lectures	Lecture and discussion method	Short questions

Seventh	3	The student should be familiar with infinite series and convergence tests for series.	Infinite series and convergence tests for series.	Lecture and discussion method	Short questions
Eighth	3	The student should understand absolute convergence and conditional convergence of series.	Absolute convergence and conditional convergence of series.	Lecture and discussion method	Short questions
Ninth	3	The student should understand the limit and continuity of functions.	Limit and continuity of functions.	Lecture and discussion method	Short questions
Tenth	3	The student should be familiar with Riemann integration and Riemann-Stieltjes integration.	Riemann integration and Riemann-Stieltjes integration	Lecture and discussion method	Short questions
Eleventh	3	The student should know the neglected set, the lengths of the bounded intervals, and their properties.	Neglected set, the lengths of the bounded intervals, and their properties	Lecture and discussion method	Short questions
Twelfth	3	Second exam	Testing the student on topics studied in previous lectures	Lecture and discussion method	Short questions
Thirteenth	3	The student should be able to understand internal and external measurement of bounded sets.	Internal and external measurement of bounded sets	Lecture and discussion method	Short questions

Fourteenth	3	The student should know the measurable functions.	Measurable functions	Lecture and discussion method	Short questions
Fifteenth	3	The student should know Lebesgue integration	Lebesgue integration	Lecture and discussion method	Short questions

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	



Course Description Form

1. Course Name: Matrices
2. Course Code: BEMAMATR113
3. Semester / Year: 2026, second semester
4. Description Preparation Date: 15-02-2026
5. Available Attendance Forms: Present
6. Number of Credit Hours (Total) / Number of Units (Total)= 60
7. Course administrator's name (mention all, if more than one name)
Name: Abdulhameed Qahtan Abbood+Dr.Kareem Abbas Laithe .....   Email: abdul.hameed@uobabylon.edu.iq .....

8. Course Objectives	
Course Objectives	The goal is to study the basic concepts of linear algebra (Vectors, Matrices, Linear Systems) in details.

9. Teaching and Learning Strategies	
Strategy	5. Paper lecture 6. Reports on results

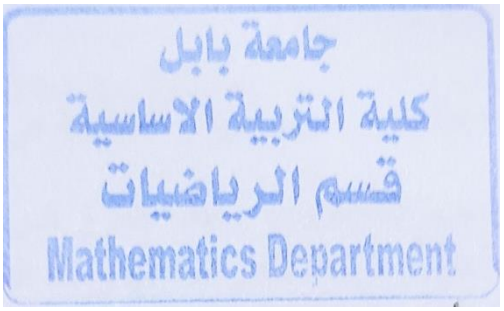
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Vectors in R^n Algebraic Operations on Vectors, Dot Product		Lecture and discussion	Short questions Quiz
2	3	norm, distance, angle, projection		Lecture and discussion	Short questions
3	3	Spatial Vectors, Cross Product		Lecture and discussion	Quiz
4	3	Matrices, Types of Matrices		Lecture and discussion	Short questions
5	3	Algebraic Operations on Matrices		Lecture and discussion	Quiz
6	3	First Midterm Exam		Lecture and discussion	Short questions
7	3	The Determinants, The Permutation Method		Lecture and discussion	Quiz
8	3	The Cofactor Expansion Method		Lecture and discussion	Short questions
9	3	Properties of the Determinants		Lecture and discussion	Quiz
10	3	The Inverse of Matrices, The Adjoint Matrix Method		Lecture and discussion	Short questions
11	3	Guass-Jordan Method		Lecture and discussion	Quiz
12	3	Properties of The Inverse of Matrices		Lecture and discussion	Short questions
13	3	Second Midterm Exam		Lecture and discussion	Quiz

14	3	Systems Of Linear Equations, Cramer's Rule Method		Lecture and discussion	Short questions
15	3	Guass-Jordan Method	(quiz and unknown)	Lecture and discussion	Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... et

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	الجبر الخطي
Electronic References, Websites	نزار حمدون شكر، يحيى عبد سعيد



Course Description Form

1. Course Name: Mathematical Analysis	
2. Course Code: BEMAFOU(2)112	
3. Semester / Year: 2026, second semester	
4. Description Preparation Date: 1-03-2026	
5. Available Attendance Forms: Present	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Abdullah hamad salman bas342.abdullah.hamad@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	**The objectives of teaching the subject of Foundations of Mathematics are to acquire the necessary mathematical knowledge for the prescribed subjects, to understand the meanings behind each mathematical concept, and to develop an understanding of the nature of the subject of Foundations of Mathematics as an integrated system of basic mathematical concepts that will provide an important basis for understanding other mathematical disciplines, especially applying the steps to solve a mathematical problem by analyzing the problem, developing a solution plan, and implementing it.**
9. Teaching and Learning Strategies	

Strategy	1. Paper lecture 2. Reports on results

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Statements and Connectives		Lecture and discussion	Short questions Quiz
2	2	Algebra of Statements		Lecture and discussion	Short questions
3	2	Open Statements		Lecture and discussion	Quiz
4	2	Logical Equivalence		Lecture and discussion	Short questions
5	2	Implication		Lecture and discussion	Quiz
6	2	Enclosures and Paragraphs		Lecture and discussion	Short questions
7	2	Exam		Lecture and discussion	Quiz
8	2	Operations on Sets		Lecture and discussion	Short questions
9	2	Equality of Sets		Lecture and discussion	Quiz
10	2	Subsets		Lecture and discussion	Short questions
11	2	Set Algebra		Lecture and discussion	Quiz

12	**2**	**Ordered Pair Concept**		**Lecture and discussion**	**Short questions**
13	**2**	**Cartesian Quotient**		**Lecture and discussion**	**Quiz**
14	**2**	**Relations**		**Lecture and discussion**	**Short questions**
15		**Exam**		**Lecture and discussion**	**Quiz**

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Discrete Mathematics and Its Applications'' by Kenneth H. Rosen, 2007.
Recommended books and references (scientific journals, reports…)	Discrete Mathematics Demystified'' by Steven G. Krantz, 2009.
Electronic References, Websites	Fundamental Concepts of Modern Mathematics'' by Max D. Larsen.

Discrete Mathematics- Schaum's Outline'' by S. Lipschutz and M. Lipson, 2007

1. Course Name: Research Methodology	
2. code Course: Methodology Research	
3. the chapter/year First semester of the academic : Year 2025-2026	
4. date numbers this Description:1/9/2025	
5. person-In : shapes the audience Available	
6. (٣) All number Units (٣) the college of number Hours The study	
7. if more from name It is mentioned The course Academic name responsible	
Name: Sarah Hussein Abdul Aoun : Email sara.hussan.bscle@uobabylon.edu.iq	
٨. اهداف المقرر	
1. It explains the steps of educational research. **2. types of educational research It describes** **3. .He formulates the research problem and its hypotheses** **4. It explains the types and categories of samples in educational .research** **5. It explains the characteristics of the test and the methods for .evaluating it**	اهداف المادة الدراسية
٩. استراتيجيات التعليم والتعلم	
.discussion, and questioning are brainstorming strategies ،Lecture	Strategies
١٠. بنية المقرر	

	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	Week
Undefined essay test	a lecture	Methodology of educational research, its objectives and importance	Students should be able to understand the subject matter of educational research .methodology	٣	١
True or false test	Problem solving	Types of educational research	Students should be able to understand the subject matter of educational research .methodology	٣	٢
Multiple choice	a lecture	Selecting and the formulating research problem	Students should be able to understand the subject matter of educational research .methodology	٣	٣
Conformity test	discussion	Research objectives	Students should be able to understand the subject matter of educational research .methodology	٣	٤
True or false test	brainstormi ng strategy	Importance of research	Students should be able to understand the subject matter of educational research .methodology	٣	٥
Conformity test	Problem solving	Research problem: hypotheses and formulation question	Students should be able to understand the subject matter of educational research .methodology	٣	٦
Multiple test	discussion	Historical Educational Research Methodology	Students should be able to understand the subject matter of research educational .methodology	٣	٧
True or false test	a lecture	descriptive approach	Students should be able to understand the subject matter of educational research .methodology	٣	٨
Conformity test	discussion	experimental method	Students should be able to understand the subject matter of educational research	٣	٩

			.methodology		
Multiple test	brainstormi ng strategy	random samples	Students should be able to understand the subject matter of educational research .methodology	٣	١٠
or false True test	a lecture	random sampling-Non	Students should be able to understand the subject matter of educational research .methodology	٣	١١
Essay test	discussion	Sample size	Students should be able to understand the subject matter of research educational .methodology	٣	١٢
Multiple choice	a lecture	Data collection tools	Students should be able to understand the subject matter of educational research .methodology	٣	١٣
True or false test	discussion	Report writing	Students should be able understand the to subject matter of educational research .methodology	٣	١٤
Practical application to a thesis or dissertation	discussion	Master's thesis or doctoral dissertation	Students should be able to understand the subject matter of educational research .methodology	٣	١٥
Course Evaluation .١١					
.learning resources ١٢					
Lectures from my instructor			Required textbooks (methodology, if (applicable		
Fundamentals of Educational Research by Abdul Hafez Shaib-Al			(Main references (sources		
Research Methods in Education and Psychology by			Recommended supporting books and		

Hamid Muhammad Hamza and others	reports, – references (scientific journals (.etc
Most reliable sources	Internet resources – Electronic references

Course Description Form

1. Course Name: Complex Analysis
2. Course Code: BEMACOX408
3. Semester / Year: First /2024-2025
4. Description Preparation Date: 15-01-2026
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total): 4/3
.....
7. Course administrator's name (mention all, if more than one name) Dr. Sukaina Al-Bairmani- sukaina.albairmani@uobbylon.edu.iq
8. Course Objectives

Course Objectives **1. That the student be able to diagnose the importance of the complex number system and its applications.** **2. This course aims to generalize the concepts of variables and different functions to complex numbers, point and directional multiplication, and other algebraic operations, while identifying the different applications.** **3. Identifying polar and Euler's formulas, their properties and benefits, and their geometric representation and analysis of complex numbers.**	• • •

4. Identifying the purpose and continuity of its properties, finding it, its theories and other topics related to these concepts.	

9. Teaching and Learning Strategies

Strategy	1- Discussion 2- The interrogation 3- The lecture 4- Various exercises and examples

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		**Complex Number System**	Lecture and discussion	Short questions Quiz
2			**Fundamental Operations with Complex Numbers, Absolute Value, Axiomatic Foundation of the Complex Number System**	Lecture and discussion	Short questions or Quiz
3	4		**Graphical Representation of Complex Numbers**	Lecture and discussion	Short questions or Quiz
4	4		**Polar Form of Complex Numbers, De Moivre's Theorem, Roots of Complex Numbers**	Lecture and discussion	Short questions or Quiz
5	4		**Euler's Formula, Polynomial Equations, The nth Roots of Unity**	Lecture and discussion	Short questions or Quiz
6	4		**Dot and Cross Product, Complex Conjugate Coordinates**	Lecture and discussion	Short questions or Quiz
7	4		**SOLVED PROBLEMS, SUPPLEMENTARY PROBLEMS**	Lecture and discussion	Short questions or Quiz

8	4		**Variables and Functions**	Lecture and discussion	Short questions or Quiz
9	4		**Single and Multiple-Valued Functions**	Lecture and discussion	Short questions or Quiz
10	4		**Inverse Functions, Curvilinear Coordinates**	Lecture and discussion	Short questions or Quiz
11	4		**The Elementary Functions**	Lecture and discussion	Short questions or Quiz
12	4		**Branch Points and Branch Lines**	Lecture and discussion	Short questions or Quiz
13	4		**Limits, Theorems on Limits, Infinity**	Lecture and discussion	Short questions or Quiz
14			**Continuity, Continuity in a Region, Uniform Continuity**	Lecture and discussion	Short questions or Quiz
15	4		**SOLVED PROBLEMS, SUPPLEMENTARY PROBLEMS**	Lecture and discussion	Short questions or Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

- **L.V. Ahlfors – Complex Analysis:** Known as the "bible" of complex analysis, this is a rigorous classic for deeper understanding.
- **John B. Conway – Functions of One Complex Variable I & II:** A standard graduate-level text, rigorous and comprehensive.
- **Serge Lang – Complex Analysis:** Offers a rigorous approach with a good problems and solutions manual.
- **E.M. Stein & R. Shakarchi – Complex Analysis:** Part of the Princeton Lectures in Analysis, providing a modern, clear, and comprehensive overview.
- **T.W. Gamelin – Complex Analysis:** Very approachable for undergraduates, focusing on geometric intuition and covering modern topics

Course Description Form

1. Course Name: Mathematical Analysis

2. Course Code:

3. Semester / Year: 2026, second semester

4. Description Preparation Date: 15-02-2026

5. Available Attendance Forms: Present

6. Number of Credit Hours (Total) / Number of Units (Total)

7. Course administrator's name (mention all, if more than one name)

Sahab Mohsan Abboud
bsc.sahab.jwer@uobabylon.edu.iq

8. Course Objectives

Course Objectives	**The Target to learn what is mathematical analysis** **Application of mathematical anlysis** **Solution using different methods** .....

9. Teaching and Learning Strategies

Strategy	**3. Paper lecture** **4. Reports on results**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٣	**Introduction to mathematical analysis**		**Lecture and discussion**	**Short questions Quiz**
2	٣	**Sequences of real numbers**		**Lecture and discussion**	**Short questions**

3	**۳**	**Convergence point and upper and lower constraints**		**Lecture and discussion**	**Quiz**
4	**۳**	**Real functions and sequences**		**Lecture and discussion**	**Short questions**
5	**۳**	**The general formula for continuity**		**Lecture and discussion**	**Quiz**
6	**۳**	**Limits of function**		**Lecture and discussion**	**Short questions**
7	**۳**	**Euclid's theorem**		**Lecture and discussion**	**Quiz**
8	**۳**	**Exercises and examples**		**Lecture and discussion**	**Short questions**
9	**۳**	**Exam**		**Lecture and discussion**	**Quiz**
10	**۳**	**Continuous functions**		**Lecture and discussion**	**Short questions**
11	**۳**	**The limit of real functions**		**Lecture and discussion**	**Quiz**
12	**۳**	**Exercises**		**Lecture and discussion**	**Short questions**
13	**۳**	**Measurable functions**		**Lecture and discussion**	**Quiz**
14	**۳**	**Theorems about measurement**		**Lecture and discussion**	**Short questions**
15		**Exam**	**(quiz and unknown)**	**Lecture and discussion**	**Quiz**

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	A S M A L L - S C A L E A P P R O A C H T O
Electronic References, Websites	*Organic Laboratory Techniques* ،Third Edition ،Donald L. Pavia

Course Description Form

1. Course Name:
Complex analysis
2. Course Code: BEMACAL401
.....
3. Semester / Year: 2025-2026
first semester .....
4. Description Preparation Date:
16-09-2025
5. Available Attendance Forms: Present
1- My presence in the classrooms 2- Through electronic platforms such as Google Classroom 3- A channel dedicated to the course via the Telegram program
6. Number of Credit Hours (4) / Number of Units (Total)= 3
7. Course administrator's name (mention all, if more than one name)
Name: Assint.prof. Sarah Abdulridha Rehman Email:
8. Course Objectives

• **Course Objective**	Origin of Complex Numbers, Definition of Complex Numbers Operations on Complex Numbers Algebraic Properties of Complex Numbers Cartesian Representation of Complex Numbers Trigonometric Sequences First Monthly Exam Polar Representation of Complex Numbers, Regions, Powers, and Roots Complex Functions Limit and Continuity Differentiation and Differentiation Formulas Analytic Functions, Cauchy-Riemann Equations Second Monthly Exam Harmonic Functions, Entire Functions, and Elementary Functions Exponential, Trigonometric, Hyperbolic, and Logarithmic Functions Examples and Review Exercises

• 9. Teaching and Learning Strategies

Strategy	1- Lectures 2- Discussion 3- Homework and short exam 4- Survey and others 5- Quick and short tests

10. Course Structure

Week	Hours	Unit or Subject Name	Required Learning Outcomes	Learning Method	Evaluation
1	4	origin and Definition of Complex Numbers	Students will be able to define complex numbers.	How to explain and detail the lecture material in person in the classroom and discussion	Asking short intellectual questions
2	4	Operations on Complex Numbers	Students will master various operations on complex numbers.	Lecture and discussion	Short questions
3	4	Algebraic Properties of Complex Numbers	Students will understand the algebraic properties of complex numbers.	Lectures, Discussion Method, Brainstorming	Quiz
4	4	Cartesian Representation of Complex Numbers	Students will apply Cartesian representation to complex numbers.	Lecture and discussion	Short questions
5	4	Trigonometric Sequences	Students will be capable of solving trigonometric sequences.	Lectures, Discussion Method	Show various examples during the lecture
6	4	First Monthly Exam			
7	4	Polar Representation, Regions, Powers, and Roots	Students will solve exercises on polar representation, regions, powers, and roots.	Lecture and discussion	Short questions
8	4	Complex Functions	Students will understand the concept and meaning of complex functions.	Lecture and discussion	Solve examples and exercises on the topic

9	4	Limits and Continuity	Students will define and identify limits and continuity.	Lecture and discussion	Various practical examples with the solution method
10	4	Differentiation and Differentiation Formulas	Students will solve problems using differentiation and its formulas.	Lecture and discussion	Short questions
11	4	Analytic Functions and Cauchy-Riemann Equations	Students will define analytic functions and Cauchy-Riemann equations.	Lecture and discussion	Quiz
12	4	Second Monthly Exam			
13	4	Harmonic, Entire, and Elementary Functions	Students will identify harmonic, entire, and elementary functions.	Lecture and discussion	Quiz
14	4	Exponential, Trigonometric, Hyperbolic, and Logarithmic Functions	Students will solve complex problems involving these types of functions.	Lecture and discussion	Short questions

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Mathematical thinking
2. Course Code: BEMACAL203
3. Semester / Year: 2025-2026
second semester
4. Description Preparation Date:
2026-2-1
5. Available Attendance Forms: Present
4- My presence in the classrooms 5- Through electronic platforms such as Google Classroom 6- A channel dedicated to the course via the Telegram program
6. Number of Credit Hours (2) / Number of Units (Total)= 2
7. Course administrator's name (mention all, if more than one name)
Name: Assist. prof. Dr. Sarah Abdulridha Rehman Email: ....
8. Course Objectives

• **Course Objective**	Meaning of Thinking (Definition - In Quranic Verses - Philosophical Approach - Psychological Approach) Thinking Levels (Teaching How to Learn - Cognitive Constraints) Content-Related Thinking - Reflective Thinking Types of Thinking (Critical - Inductive - Reflective) Types of Thinking (Mathematical - Cognitive - Logical - Deductive - Scientific) First Monthly Exam Mathematical Thinking (Meaning and Definition) - Objectives of Mathematical Thinking in the Basic Stage Fields of Mathematical Thinking (Induction - Deduction - Symbolic Representation - Relation - Formal Logic - Investigation - Proof - Problem Solving) Fields of Mathematical Thinking (Continued: Induction - Deduction - Symbolic Representation - Relation - Formal Logic - Investigation - Proof - Problem Solving) Examples and Exercises Second Monthly Exam Introduction to Methods for Developing Mathematical Thinking Developing Thinking Skills in Children Mathematical Thinking Development Programs

	Review Examples and Exercises

9. Teaching and Learning Strategies

Strategy	1- Lectures 2- Discussion 3- Homework and short exam 4- Survey and others 5- Quick and short tests

10. Course Structure

Week	Hours	Unit or Subject Name	Required Learning Outcomes	Learning Method	Evaluation
1	2	Meaning of Thinking (Definition - In Quranic Verses - Philosophical Approach - Psychological Approach)	Students will be able to define Meaning of Thinking.	How to explain and detail the lecture material in person in the classroom and discussion	Asking short intellectual questions
2	2	Thinking Levels (Teaching How to Learn - Cognitive Constraints)	Students will master various operations on Thinking Levels	Lecture and discussion	Short questions
3	2	Content-Related Thinking - Reflective Thinking	Students will understand the Content-Related Thinking -.	Lectures, Discussion Method, Brainstorming	Quiz
4	2	Types of Thinking (Critical - Inductive - Reflective)	Students will apply Cartesian Types of Thinking	Lecture and discussion	Short questions
5	2	Types of Thinking (Mathematical - Cognitive - Logical - Deductive - Scientific)	Students will be capable of Types of Thinking.	Lectures, Discussion Method	Show various examples during the lecture
6	2	First Monthly Exam			
7	2	Mathematical Thinking (Meaning and Definition) - Objectives of Mathematical Thinking in the Basic Stage	Students will solve exercises on Mathematical Thinking	Lecture and discussion	Short questions
8	2	Fields of Mathematical Thinking (Induction - Deduction - Symbolic Representation - Relation - Formal Logic - Investigation - Proof - Problem Solving)	Students will understand the Fields of Mathematical Thinking	Lecture and discussion	Solve examples and exercises on the topic
9	2	Fields of Mathematical Thinking (Continued: Induction - Deduction - Symbolic Representation - Relation - Formal Logic - Investigation - Proof - Problem Solving)	Students will define and identify Fields of Mathematical Thinking	Lecture and discussion	Various practical examples with the solution method

10	2	Examples and Exercises	Students will solve problems.	Lecture and discussion	Short questions
11	2	Second Monthly Exam			
12	2	Introduction to Methods for Developing Mathematical Thinking	Students will define Introduction to Methods for Developing Mathematical Thinking	Lecture and discussion	Quiz
13	2	Developing Thinking Skills in Children	Students will identify Developing Thinking Skills in Children	Lecture and discussion	Quiz
14	2	Mathematical Thinking Development Programs	Mathematical Thinking Development Programs	Lecture and discussion	Short questions

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Ordinary differential equation
2. Course Code: BEMAODE306
3. Semester / Year: 2025, First semester
4. Description Preparation Date: 1-09-2025
5. Available Attendance Forms: Present
6. Number of Credit Hours (Total) / Number of Units (Total)= 60
7. Course administrator's name (mention all, if more than one name)
Name: Lahib Zaidan Email: lahibzaidan@uobabylon.edu.iq

8. Course Objectives	
Course Objectives	The Target to learn what is ordinary differential equation …. Application of ordinary differential equation ….. Solution using different methods ….

9. Teaching and Learning Strategies	
Strategy	5. Paper lecture 6. Reports on results

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Introduction	Lecture and discussion	Short questions Quiz
2	4		Differential equation	Lecture and discussion	Short questions

3	4		O.D.E	Lecture and discussion	Quiz
4	4		Solution of O.D.E	Lecture and discussion	Short questions
5	4		Homogeneous Equations	Lecture and discussion	Quiz
6	4		Finding general sol by I. F.	Lecture and discussion	Short questions
7	4		Genral Solution of homo. D. E	Lecture and discussion	Quiz
8	4		First Order Linear Diff Eq	Lecture and discussion	Short questions
9	4		Bernoulli's Eq	Lecture and discussion	Quiz
10	4		Exam	Lecture and discussion	Short questions
11	4		Ricatti's Eq	Lecture and discussion	Quiz
12	4		Clairaut's Eq	Lecture and discussion	Short questions
13	4		Homogeneous D. E. with constant coefficients	Lecture and discussion	Quiz
14	4		Complementary Solution	Lecture and discussion	Short questions
15			Exam	Lecture and discussion	Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Ordinary Differential Equation
D. SoMASUNDARAM

AN INTRODUCTION TO ORDINARY
DIFFERENTIAL EQUATIONS
JAMES C. ROBINSON

Course Description Form

1. Course Name:
Principles of Probability
2. Course Code: BEMAPRO206
.....
3. Semester / Year:
First Semester
4. Description Preparation Date:
9-3-2026
5. Available Attendance Forms:
Regular classroom attendance
6. Number of Credit Hours (Total) / Number of Units (Total):
2 hours per week
7. Course administrator's name (mention all, if more than one name)
Name: Ghufran aziz mudhar Email: bas355.qufran.aziz@uobabylon.edu.iq
8. Course Objectives

Course Objectives

The main objectives of this course are:

- Introduce students to the basic concepts of probability theory.
- Develop the ability to analyze random events and probabilistic models.
- Apply probability rules to solve real problems.
- Prepare students for advanced courses in statistics and stochastic processes.

9. Teaching and Learning Strategies

Strategy	Lectures and classroom explanation Solving probability problems and exercises Classroom discussions Homework assignments Short quizzes

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2	Understand basic probability concepts	Introduction to Probability	Lecture	Homework
2	2	Identify sample space and events	Sample Space and Events	Lecture	Homework
3	2	Understand counting principles	Counting Principles	Lecture	Quiz
4	2	Solve permutation problems	Permutations	Lecture	Homework
5	2	Solve combination problems	Combinations	Lecture	Quiz
6	2	Apply permutations and combinations in probability	Applications of Counting	Lecture	Homework
7	2	Apply addition rule of probability	Addition Rule	Lecture	Quiz
8	2	Evaluate student understanding	Midterm Exam	Exam	Midterm
9	2	Apply multiplication rule	Multiplication Rule	Lecture	Quiz
10	2	Understand conditional probability	Conditional Probability	Lecture	Homework
11	2	Understand independence of events	Independent Events	Lecture	Quiz
12	2	Apply independence in probability problems	Applications of Independence	Lecture	Homework
13	2	Understand Bayes theorem	Bayes Theorem	Lecture	Quiz
14	2	Solve Bayes theorem problems	Applications of Bayes Theorem	Lecture	Homework
15	2	Evaluate student achievement	Final Exam	Exam	Final

11. Course Evaluation

Activity	Marks
Daily preparation and Homework and assignments and Quizzes	10
First month exam	15
Second month exam	15
Final exam	60
Total	100

12. Learning and Teaching Resources

Required textbooks
Sheldon Ross, A First Course in Probability, Pearson.
Main references
William Feller, An Introduction to Probability Theory.
Recommended books
Trivedi, Probability and Statistics with Reliability Applications.
Electronic references

Course Description Form .....

1. Course Name:
Computer
2. Course Code: BEMACOMS111
3. Semester / Year: 2025-2026
second semester
4. Description Preparation Date:
2026-2-15
5. Available Attendance Forms: Present
7- My presence in the classrooms 8- Through electronic platforms such as Google Classroom 9- A channel dedicated to the course via the Telegram program

6. Number of Credit Hours (3) / Number of Units (Total)= 2

7. Course administrator's name (mention all, if more than one name)

Name: Assist. prof. Maysoon Khazaal Abbas
Email: basic.maysoon.maroof@uobabylon.edu.iq

8. Course Objectives

• **Course Objective**	This course primarily aims to enable students to use Microsoft Word effectively. The objectives are summarized as follows: Mastering basic skills: Learning how to operate the program, manipulate text (writing, deleting, copying, pasting), and manage documents professionally. Developing formatting skills: The ability to format text and paragraphs, change fonts, and use pre-made styles to enhance the appearance of documents. Using advanced tools: Practicing the use of spell and grammar checkers and autocorrect to ensure the quality of written content. Organizing data: Learning how to create and format tables within documents to organize information and data. Preparing documents for printing: Understanding how to adjust margins, insert dates, and number pages to prepare research papers and academic reports.

9. Teaching and Learning Strategies

Strategy	1- Lectures 2- Discussion 3- Homework and short exam 4- Survey and others 5- Quick and short tests

10. Course Structure

Week	Hours	Unit or Subject Name	Required Learning Outcomes	Learning Method	Evaluation
1	2	Run the program	Knowledge and understanding Run the program	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
2	2	Write text, delete text	Knowledge and understanding Write text, delete text	The material is explained in detail and includes	oral exams And the process

				practical application. The course is taught in person in the classroom.	
3	2	Copy and paste from one site to another	Knowledge and understanding Copy and paste from one site to another	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
4	2	Searching for and replacing text	Knowledge and understanding Searching for and replacing text	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
5	2	Auto-correction	Knowledge and understanding Auto-correction	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
6	2	Automatic formatting	Knowledge and understanding Automatic formatting	The material is explained in detail and includes practical application. The course is	oral exams And the process

				taught in person in the classroom.	
7	2	Exit the program	Knowledge and understanding Exit the program	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
8	2	Formatting, simple letter formatting, font change	Knowledge and understanding Formatting, simple letter formatting, font change	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
9	2	Text formatting, paragraph formatting, style formatting	Knowledge and understanding Text formatting, paragraph formatting, style formatting	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
10	2	Document organization	Knowledge and understanding Document organization	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process

11	2	Use the spell checker, use the grammar checker	Knowledge and understanding Use the spell checker, use the grammar checker	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
12	2	Using automatic word delivery	Using automatic word delivery	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
13	2	Footnotes (enter dates and page numbers))	Knowledge and understanding Footnotes (enter dates and page numbers))	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
14	2	Tables	Knowledge and understanding Tables	The material is explained in detail and includes practical application. The course is taught in person in the classroom.	oral exams And the process
15		Navigate between tables, format the table		The material is explained in detail and	oral exams And the process

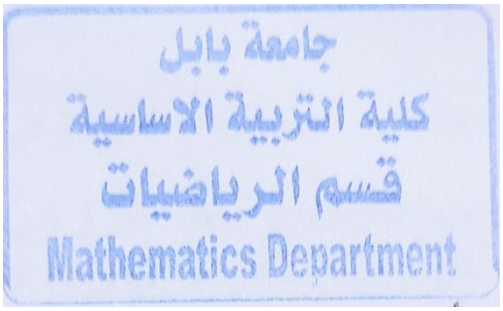
				includes practical application. The course is taught in person in the classroom.	

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	



1. Course Title: Psychology of Teaching Classroom Thinking

2. Course code: Psychology of Teaching Classroom Thinking

3. the chapter/academic year ٢٠٢٦-٢٠٢٥Second semester of the : Year

4. ٢٠٢٦/٢/١٣ : Description this numbers date

5. person-In : Available the audience shapes

6. number (٣) the college of The study Hours number
(٣) All Units

7. from more if Academic The course responsible name
It is mentioned name

Sarah Hussein Abdul Aoun millimeter
: Email sara.hussan.bscle@uobabylon.edu.iq
Prof. Dr. Saeed Hussein Ali
basic.saaed.hus@uobabylon.edu.iq

٨. اهداف المقرر

Understands education and learning-١ **Explains the concept of classroom teaching -٢** **to understand modern models Learns -٣** **It demonstrates the importance of the electronic classroom -٤** **Analyzes educational problems -٥**	اهداف المادة الدراسية

٩. استراتيجيات التعليم والتعلم

.Lecture, discussion, and questioning are brainstorming strategies	Strategies

١٠. بنية المقرر

Week	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	
١	٣	To enable students to understand the psychology of teaching classroom thinking	The concept of learning and learning	lecture a	Undefined essay test
٢	٣	To enable students to	Classroom	Problem	True or false test

	solving	management and the art of teaching	understand the of teaching psychology classroom thinking		
Multiple choice	a lecture	The concept of the classroom as a cognitive and intellectual field Exploratory learning Gradual education	To enable students to understand the psychology of teaching classroom thinking	٣	٣
Conformity test	discussion	Education for Empowerment based education-Meaning	To enable students to understand the psychology of teaching classroom thinking	٣	٤
True or false test	brainstorming strategy	Cognitive education Concept and importance	students to To enable understand the psychology of teaching classroom thinking	٣	٥
Conformity test	Problem solving	The importance of the online classroom	To enable students to understand the psychology of teaching classroom thinking	٣	٦
Multiple test	discussion	Enrichment links for the teaching and learning process	To enable students to understand the psychology of teaching classroom thinking	٣	٧
True or false test	a lecture	Electronic tests and their design methods	To enable students to understand the psychology of teaching classroom thinking	٣	٨
Conformity test	discussion	Teaching thinking	To enable students to understand the psychology of teaching classroom thinking	٣	٩
Multiple test	brainstorming strategy	The importance of teaching thinking	enable students to To understand the psychology of teaching classroom thinking	٣	١٠
True or false test	a lecture	Thinking patterns	To enable students to understand the psychology of teaching classroom thinking	٣	١١
Multiple test	discussion	4mat model	enable students to To understand the psychology of teaching classroom thinking	٣	١٢
Multiple test	discussion	SCAMER model	To enable students to understand the psychology of teaching classroom thinking	٣	١٣
Multiple test	discussion	Kolb model	students to To enable understand the psychology of teaching classroom thinking	٣	١٤
True or false test	a lecture	Practical applications of	To enable students to	٣	١٥

		thinking skills teaching models and tests	understand the psychology of teaching classroom thinking		
Course Evaluation .١١					
.learning resources ١٢					
Lectures from my instructor			(Required textbooks (methodology, if applicable		
Various sources			(Main references (sources		
Various sources			Recommended supporting books and references (.reports, etc – scientific journals)		
Most reliable sources			Internet resources – Electronic references		

Course Description Form

1. Course Name:
matlab
2. Course Code:
3. Semester / Year:
2025-2026
4. Description Preparation Date:
5. Available Attendance Forms:
1- in person 2- telegram 3- google classrom
6. Number of Credit Hours (3) / Number of Units (2)
....
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	•
1. Lectures 2. Discussions 3. Assignments and quizzes 4. Inquiries and other activities 5. Quick quizzes and short tests	• •

9. Teaching and Learning Strategies	
Strategy	

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**

Week	**Hours**	**Topic Name**	**Teaching Method**	**Assessment Method**	**Intended Learning Outcomes**
1	4	MATLAB's Power of Computational Mathematics	Detailed explanation of lecture material in the classroom with discussion	Short questions	The student understands the topic
2	4	ENVIRONMENT	Lecture, illustrative examples, and discussion	Oral tests	The student understands the topic
3	4	BASIC SYNTAX	Lectures, discussion method, brainstorming	Oral tests	The student understands the topic
4	4	BASIC SYNTAX	Lectures and discussion method	Oral tests	The student understands the topic
5	4	VARIABLES	Lectures and discussion method	Oral tests	The student understands the topic
6	4	M-FILES: Creating and Running Script Files	Lecture with detailed explanation	Oral tests	The student understands the topic
7	4	DATA TYPES	Lecture with detailed explanation	Oral tests	The student understands the topic
8	4	OPERATORS	Lectures and discussion method	Oral tests	The student understands the topic
9	4	LOOP TYPES	Lecture with	Oral tests	The student

Week	Hours	Topic Name	Teaching Method	Assessment Method	Intended Learning Outcomes
			detailed explanation		understands the topic
10	4	VECTORS	Lectures and discussion method	Oral tests	The student understands the topic
11	4	MATRIX	Lectures and discussion method	Oral tests	The student understands the topic
12	4	Referencing the Elements of a Matrix	Lectures, explanation, and discussion	Oral tests	The student understands the topic
13	4	ARRAYS	Lecture and discussion	Oral tests	The student understands the topic
14	4	Plotting	Lecture and discussion	Oral tests	The student understands the topic
15	4	Plotting	Lecture and discussion	Oral tests	The student understands the topic

11. Course Evaluation	

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	The grade is distributed out of 40 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written, and reports. It is distributed as (28) marks for theory and (12) marks for practical, representing the annual effort for the subject. The final exam is worth (40) marks for theory and (20) marks for practical, and thus the final grade is out of (100).
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1.Matlab numerical computing tutorial
2.INTRODUCTION TO MATLAB FOR ENGINEERING STUDENTS David Houcque Northwestern University (version 1.2, August 2005)

Course Description Form

1. Course Name: Matrices

2. Course Code: BEMAMATR113

3. Semester / Year: 202٦, second semester

4. Description Preparation Date: ١٥-0٢-202٦

5. Available Attendance Forms: Present

6. Number of Credit Hours (Total) / Number of Units (Total)= 60

7. Course administrator's name (mention all, if more than one name)

Name: Abdulhameed Qahtan Abbood
Email: abdul.hameed@uobabylon.edu.iq

8. Course Objectives

Course Objectives	The goal is to study the basic concepts of linear algebra (Vectors, Matrices, Linear Systems) in details.

9. Teaching and Learning Strategies

Strategy	7. Paper lecture 8. Reports on results

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Vectors in R^n Algebraic Operations on Vectors, Dot Product		Lecture and discussion	Short questions Quiz

2	3	norm, distance, angle, projection		Lecture and discussion	Short questions
3	3	Spatial Vectors, Cross Product		Lecture and discussion	Quiz
4	3	Matrices, Types of Matrices		Lecture and discussion	Short questions
5	3	Algebraic Operations on Matrices		Lecture and discussion	Quiz
6	3	First Midterm Exam		Lecture and discussion	Short questions
7	3	The Determinants, The Permutation Method		Lecture and discussion	Quiz
8	3	The Cofactor Expansion Method		Lecture and discussion	Short questions
9	3	Properties of the Determinants		Lecture and discussion	Quiz
10	3	The Inverse of Matrices, The Adjoint Matrix Method		Lecture and discussion	Short questions
11	3	Guass-Jordan Method		Lecture and discussion	Quiz
12	3	Properties of The Inverse of Matrices		Lecture and discussion	Short questions
13	3	Second Midterm Exam		Lecture and discussion	Quiz
14	3	Systems Of Linear Equations, Cramer's Rule Method		Lecture and discussion	Short questions
15	3	Guass-Jordan Method	(quiz and unknown)	Lecture and discussion	Quiz

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....et

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	الجبر الخطي
Electronic References, Websites	نزار حمدون شكر، يحيى عبد سعيد

Course Description Form

1. Course Name: Foundations of mathematics II
2. Course Code:
.....
3. Semester / Year: 202٥-202٦, Second semester
4. Description Preparation Date: 01-03-2026
5. Available Attendance Forms: Present
10- My presence in the classrooms 11- Through electronic platforms such as Google Classroom 12- A channel dedicated to the course via the Telegram program
6. Number of Credit Hours (4) / Number of Units (Total)= 3
Mohammed Kadhim AL-Mamoori
7. Course administrator's name (mention all, if more than one name)

Name: Dr. Mohammed Kadhim AL-Mamoori
Email: bas926.mohammed.kadhum@uobabylon.edu.iq

8. Course Objectives

• **Course Objective**	• The concept of a function • Special functions (invariant and invariant) • Types of functions • Composition of functions with examples • Theorems on composition of functions • Inverse of a function with examples • Theorems on the inverse of a function • The concept of a binary operation and its properties • The concept of a mathematical system • A pseudogroup • The concept of a group with examples • Some theorems on groups Some theorems for operations on sets Relations and Cartesian products Types of relations and equivalence classes

9. Teaching and Learning Strategies

Strategy	1- Lectures 2- Discussion 3- Homework and short exam 4- Survey and others 5- Quick and short tests

10. Course Structure

Week	Ho	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The student should know Principles of a function	The concept of a function	How to explain and detail the lecture material in person in the classroom and discussion	Asking short intellectual questions
2	3	The student should be able to identify Special functions (invariant and invariant)	Special functions (invariant and invariant)	Lecture and discussion	Short questions
3	3	The student must be able to Types of functions	Types of functions	Lectures, Discussion Method, Brainstorming	Quiz
4			Exercises	Lecture and discussion	Short questions

5	3	The student must meet the Composition of functions with examples	Composition of functions with examples	Lecture and discussion	Short questions
6	3	The student must be able to test the Theorems on composition of functions	Theorems on composition of functions	Lectures, Discussion Method	Show various examples during the lecture
7	3	T he student should know the Inverse of a function with examples	Inverse of a function with examples	presentation and mathematical detail of the material	Students solve examples during the lecture after the topic has been explained
8	3		First month exam		
9	3	he student should understand the Theorems on the inverse of a function	Theorems on the inverse of a function	Lecture and discussion	Solve examples and exercises on the topic
10	3	The student should know the The concept of a binary operation and its properties	The concept of a binary operation and its properties	Lecture and discussion	Various practical examples with the solution method
11	3	The student should be familiar with the The concept of a mathematical system	The concept of a mathematical system	Lecture and discussion	Short questions
12	3	The student should know the A pseudogroup	A pseudogroup	Lecture and discussion	Quiz
13	3		The concept of a group with examples	Lecture and discussion	Short questions
14	3		Second month exam		
15	3		Some theorems on groups Relations and Cartesian products		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

8. Course Name: Research Methodology

9. Course code: Research Methodology

10. the chapter/year academic ٢٠٢٥-٢٠٢٤First semester of the : Year

11.٢٠٢٥/٩/١ : Description this numbers date

12.person-In : Available the audience shapes

13. (٣) the college of The study Hours number
(٣) All Units number

14. more if Academic The course responsible name
It is mentioned name from

Sarah Hussein Abdul Aoun :Name
: Email sara.hussan.bscle@uobabylon.edu.iq

٨. اهداف المقرر

اهداف المادة الدراسية	**6. It explains the steps of educational research.** **7. research It describes types of educational** **8. .He formulates the research problem and its hypotheses** **9. It explains the types and categories of samples in educational .research** **10. It explains the characteristics of the test and the methods for .evaluating it**

٩. استراتيجيات التعليم والتعلم

Strategies	**.questioning are brainstorming strategies Lecture, discussion, and**

١٠. بنية المقرر

Week	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	
١	٣	Students should be able to understand the subject matter of educational .methodology research	Methodology of educational research, its objectives and importance	a lecture	Undefined essay test
٢	٣	Students should be able to understand the subject matter of educational research .methodology	Types of educational research	Problem solving	True or false test

Multiple choice	a lecture	Selecting and formulating the research problem	Students should be able to understand the subject matter of educational research .methodology	٣	٣
Conformity test	discussion	Research objectives	Students should be able to understand the subject matter of educational research .methodology	٣	٤
false test True or	brainstorming strategy	Importance of research	Students should be able to understand the subject matter of educational research .methodology	٣	٥
Conformity test	Problem solving	Research problem: hypotheses and question formulation	should be Students able to understand the subject matter of educational research .methodology	٣	٦
Multiple test	discussion	Historical Educational Research Methodology	Students should be able to understand the subject matter of educational research .methodology	٣	٧
True or false test	a lecture	descriptive approach	Students should be able to understand the subject matter of educational research .methodology	٣	٨
Conformity test	discussion	experimental method	Students should be able to understand the of subject matter educational research .methodology	٣	٩
Multiple test	brainstorming strategy	random samples	Students should be able to understand the subject matter of educational research .methodology	٣	١٠
True or false test	a lecture	random sampling-Non	should be Students able to understand the subject matter of educational research .methodology	٣	١١
Essay test	discussion	Sample size	Students should be able to understand the subject matter of educational research .methodology	٣	١٢
Multiple choice	a lecture	collection tools Data	Students should be able to understand the subject matter of educational research .methodology	٣	١٣

True or false test	discussion	Report writing	Students should be able to understand the subject matter of educational research .methodology	٣	١٤
Practical application to a thesis or dissertation	discussion	Master's thesis or doctoral dissertation	Students should be able to understand the subject matter of educational research .methodology	٣	١٥
Course Evaluation .١١					
.resources learning ١٢					
Lectures from my instructor			Required textbooks (methodology, if (applicable		
Fundamentals of Educational Research by Abdul Hafez Shaib-Al			(Main references (sources		
Research Methods in Education and Psychology by Hamid Muhammad Hamza and others			Recommended supporting books and (.reports, etc – references (scientific journals		
Most reliable sources			Internet resources – Electronic references		

Course Description Form

1. Course Name
Group Theory .....
2. Course Code
Course .....
3. Semester / Year
First Semester 2025-2026
4. Description Preparation Date
14/9/2025
5. Available Attendance Forms: Present
6. Number of Credit Hours (3) / Number of Units (Total) = 30
7. Course administrator's name (mention all, if more than one name)
Sahab Mohsan Abboud bsc.sahab.jwer@uobabylon.edu.iq
8. Course Objectives

Course Objectives	• **Modern Abstract Algebra** • **Binary Operations and the Mathematical System** • **Groups and Subgroups** • **The Density of a Group** • **The Integer Group** • **Subgroups** • **Quotient Groups** • **Conjugates** • **Rotating Groups** • **Generators in a Group** •

9. Teaching and Learning Strategies

Strategy	**1. Lectures** **2. Discussions** **3. Assignments and quizzes** **4. Inquiries and other activities** **5. Quick quizzes and short tests**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٣	Binary operations	The student knows the binary process	Lecture and discussion	Solve various examples
2	٣	Mathematical system and semi group	The student knows the mathematical system and semi group	Lecture and discussion	Short questions
3	٣	Group and group properties	The student knows the group	Lecture and discussion	Solve various examples
4	٣	Sub group	The student understands sub group	Lecture and discussion	Various questions and examples
5	٣	Group of integers number	The student knows group of integers number	Lecture and discussion	Solve various examples
6	٣	First exam			
7	3	Normal sub group	The student knows normal subgroup	Lecture and discussion	Solve various examples
7	٣	Gangrenes’	The student knows the gangrenes’	Lecture and discussion	Quiz

8	**٣**	**Cosset of subgroup**	**The student knows the cosset of subgroup**	**Lecture and discussion**	**Solve various examples**
9	**٣**	**Homomorphism of group**	**The student knows the homomorphism of group**	**Lecture and discussion**	**Solve various examples**
10	**٣**	**Exercises**			
11	**٣**	**Second month exam**			
12	**٣**	**Isomorphism of group**	**The student knows the isomorphism of group**	**Lecture and discussion**	**Solve various examples**
13	**٣**	**Theorems about Homomorphism**	**The student knows the homomorphism of ring**	**Lecture and discussion**	**Solve various examples**
14	**٣**	**Theorems about isomorphism**			
15					

Course Evaluation

The grade is distributed out of (40) according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written and written exams and reports. It is distributed as follows: (30) theoretical grades and (10) grades that represent attendance and participation inside the classroom and represent the annual effort for the subject. The final exam is out of (60) grades, and thus the final grade is out of (100).

Educational Resources

1. Principles of Modern Abstract Algebra.
2. Burton.
3. group and Field
4. Textbook for Colleges of Basic Education

Course Description Form

1. Course Name: Ring Theory
2. Course Code: Course
3. Semester / Year: 2025- 2026, second semester
.....
4. Description Preparation Date: 3-02-2026
.....
5. Available Attendance Forms: Present
6. Number of Credit Hours (3) / Number of Units (Total) = 30
7. Course administrator's name (mention all, if more than one name)
Sahab Mohsan Abboud bsc.sahab.jwer@uobabylon.edu.iq
8. Course Objectives

Course Objectives	• **Ring** • **Subring and its relation to the ring** • **Commutative ring** • **Center of the ring** • **Ring of integers** • **Zero divisors**

	• **Divisible ring** • **Perfections in the ring** • **Ring isomorphism** • **Ring of polynomials** • **Ring of truncated polynomal**

9. Teaching and Learning Strategies

Strategy	**1. Lectures** **2. Discussions** **3. Assignments and quizzes** **4. Inquiries and other activities** **5. Quick quizzes and short tests**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	۳	**The ring and the properties of the ring**	**The student knows the ring**	**Lecture and discussion**	**Solve various examples**
2	۳	**ring of real numbers**	**The student knows the ring of real numbers**	**Lecture and discussion**	**Short questions**
3	۳	**Sub ring**	**The student knows the sub ring**	**Lecture and discussion**	**Solve various examples**
4	۳	**Zero divisor**	**The student understands zero divisors**	**Lecture and discussion**	**Various questions and examples**
5	۳	**Ideals**	**The student knows the ideals**	**Lecture and discussion**	**Solve various examples**
6	۳	**Integral domain**	**The student knows the integral domain**	**Lecture and discussion**	**Short questions**
7	۳	**Center of ring**	**The student knows the center of R**	**Lecture and discussion**	**Quiz**
8	۳	**Exercises and examples**		**Lecture and discussion**	
9	۳	**First month exam**			
10	۳	**The division ring**	**The student knows the division ring**	**Lecture and discussion**	**Short questions**
11	۳	**polynomial ring**	**The student knows the polynomial ring**	**Lecture and discussion**	**Solve various examples**

12	**٣**	**truncated polynomial ring**	**The student knows the polynomial ring**	**Lecture and discussion**	**Solve various examples**
13	**٣**	**Homomorphism of ring**	**The student knows the homomorphism of ring**	**Lecture and discussion**	**Solve various examples**
14	**٣**	**Second month exam**			
15		**Theorems about Homomorphism**		**Lecture and discussion**	

Course Evaluation

The grade is distributed out of (40) according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written and written exams and reports. It is distributed as follows: (30) theoretical grades and (10) grades that represent attendance and participation inside the classroom and represent the annual effort for the subject. The final exam is out of (60) grades, and thus the final grade is out of (100).

Educational Resources

1. **Principles of Modern Abstract Algebra.**
2. **Burton.**
3. **Rings and Fields**
4. **Textbook for Colleges of Basic Education**

جامعة بابل
كلية التربية الاساسية
قسم الرياضيات
Mathematics Department

Course namere/ Mathematical Thinking - Stage Three mathematics department
Course code:
Semester/Year 2025
Date of preparation of this description 5/02/2026
Available attendance forms: In-person
Total number of study hours (2) Total number of units (2)
Name of the course administrator if more than one name is mentioned: sarah nahed Abdl abass
bas203.sarah.nahad@uobabylon.edu.iqالايميل
8- Course objectives

The aim of teaching mathematical thinking is to educate students on the importance of mathematical thinking for learners and to train them in solving mathematical problems using given information and methods of proof, whether direct or indirect. It also aims to familiarize them with the relationship between mathematical thinking and arithmetic operations through generalization, abstraction, modeling, and problem-solving strategies specific to mathematical thinking. This course aims to introduce mathematics students to the subject of mathematical thinking, including its definition, objectives, philosophical, educational, social, and cognitive foundations, requirements, needs, and strategies. Furthermore, it focuses on the skills required to integrate thinking with mathematical content.	Subject objectives
9-strategies Learning and teaching	
Lecture, discussion and questioning	Strategies

10- Course structure

Evaluation method	Learning method	Name of the unit or topic	Required educational outcomes	Watches	The week
Exam after the lesson	My presence	Introduction to Mathematical Thinking and its Definition	Introducing the student to the topic	2	1
Discussion question	My presence	Representing Mathematical Thinking as	Introducing the student to the topic	2	2

		a Diagram of Higher Levels of Mental Activity			
Discussion question	My presence	Mathematical Thinking and the Miraculous Nature of the Holy Quran, Citing Quranic Verses	Introducing the student to the topic	2	3
Exam after the lesson	My presence	Mathematical Thinking Skills	Introducing the student to the topic	2	4
Discussion question	My presence	Theoretical Exam	Introducing the student to the topic	2	5
Discussion question	My presence	Methods of Mathematical Proof with Examples	Introducing the student to the topic	2	6
Discussion question	My presence	The Importance of Mathematical Thinking for Learners	Introducing the student to the topic	2	7
Worksheet	My presence	Mathematical Thinking and the Importance of Teaching Mathematics	Introducing the student to the topic	2	8
Discussion question	My presence	Mathematical Thinking Skills	Introducing the student to the topic	2	9
Discussion question	My presence	Inductive Reasoning Test and Deductive Reasoning Test	Introducing the student to the topic	2	10
Exam after the lesson	My presence	Second Monthly Exam	Introducing the student to the topic	2	11
Discussion question	My presence	Thinking Strategies for Mathematical Proof	Introducing the student to the topic	2	12
Exam after the lesson	My presence	Knowledge and Skills of Mathematical Reasoning for Proof	Introducing the student to the topic	2	13
Worksheet	My presence	Mathematical Reasoning and NCTM Standards	Introducing the student to the topic	2	14

11-Course Evaluation

Distribution of grades out of 0 according to the tasks assigned to the student, such as daily .preparation, daily, oral and monthly exams

12-Learning and Teaching Resources

Al-Absi, Muhammad Mustafa (2009): Games and Thinking in Mathematics, Dar Al-Masirah, Amman Al-Kubaisi, Abdulwahid Hamid and Madrakah Saleh Abdullah (2018): Mind Maps in Teaching .Mathematics, Arab Community Library, Amman	(Required textbooks (methodology if any
	(Main References (Sources
nothing	Recommended supporting books and references (scientific journals - reports (.....
Everything related to the topics can be accessed via .the Internet, provided that it is written by hand	Electronic References - Internet Resources

Course Description Form

1. Course Name: Foundations of mathematics II
2. Course Code:
3. Semester / Year: 202٥-202٦, Second semester
4. Description Preparation Date: 01-03-2026
5. Available Attendance Forms: Present
13- My presence in the classrooms 14- Through electronic platforms such as Google Classroom 15- A channel dedicated to the course via the Telegram program
6. Number of Credit Hours (4) / Number of Units (Total)= 3
Mohammed Kadhim AL-Mamoori
7. Course administrator's name (mention all, if more than one name)
Name: Dr: Abdullah Yhya AL-Masoodi Email: bas926.mohammed.kadhum@uobabylon.edu.iq ....
8. Course Objectives

• **Course Objective**	• Axiomatic System • Young-Fano System • Euclidean Geometry • Foundations of Geometry • Hyperbolic Geometry • Elliptic Geometry • Some theorems

• 9. Teaching and Learning Strategies

Strategy	1- Lectures 2- Discussion 3- Homework and short exam 4- Survey and others 5- Quick and short tests

10. Course Structure

Week	Ho	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The student should know Principles of a function	The concept of a function	How to explain and detail the lecture material in person in the classroom and discussion	Asking short intellectual questions
2	3	The student should be able to identify Special functions (invariant and invariant)	Special functions (invariant and invariant)	Lecture and discussion	Short questions
3	3	The student must be able to Types of functions	Types of functions	Lectures, Discussion Method, Brainstorming	Quiz
4			Exercises	Lecture and discussion	Short questions
5	3	The student must meet the Composition of functions with examples	Composition of functions with examples	Lecture and discussion	Short questions
6	3	The student must be able to test the Theorems on composition of functions	Theorems on composition of functions	Lectures, Discussion Method	Show various examples during the lecture
7	3	T he student should know the Inverse of a function with examples	Inverse of a function with examples	presentation and mathematical detail of the material	Students solve examples during the lecture after the topic has been explained
8	3		First month exam		
9	3	he student should understand the Theorems on the inverse of a function	Theorems on the inverse of a function	Lecture and discussion	Solve examples and exercises on the topic
10	3	The student should know the The concept of a binary operation and its properties	The concept of a binary operation and its properties	Lecture and discussion	Various practical examples with the solution method
11	3	The student should be familiar with the The concept of a mathematical system	The concept of a mathematical system	Lecture and discussion	Short questions
12	3	The student should know the A pseudogroup	A pseudogroup	Lecture and discussion	Quiz
13	3		The concept of a group with examples	Lecture and discussion	Short questions
14	3		Second month exam		
15	3		Some theorems on groups Relations and Cartesian products		