

Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Apparatus
Quality Assurance and Academic Accreditation
Department — Accreditation Division
University of Diyala – College of Basic Education
Department of Mathematics (EST. 1994)



Academic Program and Course Specification Guide

Academic Year 2025-2026

Department of Mathematics

INTRODUCTION

An educational program constitutes a coordinated and structured package of academic courses, comprising educational procedures and experiences systematically arranged as course syllabi. Its primary purpose is to build and refine graduates' skills, rendering them fully qualified to meet labor market requirements. The program is annually reviewed and evaluated through internal and external audit mechanisms, such as external examiner schemes.

The Academic Program Specification provides a concise summary of the main features of the program and its courses, outlining the knowledge, skills, and competencies intended to be imparted to students based on the program's defined educational objectives. This specification serves as the cornerstone for achieving professional program accreditation. It is collaboratively prepared by the academic faculty under the supervision of departmental scientific committees.

This second edition of the guide contains an updated academic program specification reflecting recent developments in the higher education system in Iraq. It encompasses specifications for traditional academic structures (annual and semester systems) as well as the generalized framework published under Ministry Circular No. TM 3/2906 dated May 3, 2025 regarding programs adopting the Bologna Process. In this context, we emphasize the vital importance of drafting academic program and course specifications to ensure the smooth and effective operation of the educational process

1. KEY CONCEPTS AND DEFINITIONS

- **Academic Program Specification:** Provides a concise overview of the program's vision, mission, and objectives, accompanied by a precise description of intended learning outcomes (ILOs) aligned with specific teaching and learning strategies.
- **Course Specification:** Provides a summary of the essential characteristics of a course and the learning outcomes expected of students, demonstrating how learning opportunities are maximized. Derived directly from the program specification.
- **Program Vision:** An ambitious, inspiring, motivating, realistic, and achievable statement depicting the future aspirations of the academic program.
- **Program Mission:** Briefly outlines the fundamental goals and activities required to achieve them, establishing the direction and developmental pathway of the program.
- **Program Objectives:** Measurable and observable statements defining what the academic program intends to accomplish within a specified timeframe.
- **Curriculum Structure:** The complete set of academic courses/subjects included in the program according to the adopted study system (semester, annual, or Bologna Process), categorized into Ministry, University, College, and Department requirements, along with allocated credit units.
- **Learning Outcomes (ILOs):** An integrated set of knowledge, skills, and values acquired by the student upon successful completion of the academic program. Course ILOs must directly align with overall program objectives.
- **Teaching and Learning Strategies:** Pedagogical methods and structured plans employed by faculty members to enhance student learning and achieve intended learning outcomes across all in-class and co-curricular activities.

2. ACADEMIC PROGRAM SPECIFICATION FORM



وزارة التعليم العالي والبحث العلمي
جهاز الاشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الاكاديمي

استمارة وصف البرنامج الأكاديمي للكلية للعام الدراسي 2025-2026

الجامعة: ديالى

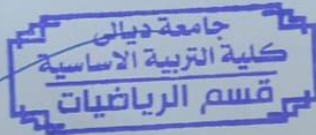
الكلية/المعهد: التربية الأساسية

القسم العلمي: الرياضيات

اسم البرنامج الأكاديمي او المهني / تربية اساسية / بكالوريوس رياضيات

النظام الدراسي / فصلي

تاريخ ملء الملف: 2025 / 10 / 1



التوقيع

اسم معاون القسم: أ.د. حيدر عبد الباقي

التاريخ: 2026 / 4 / 26

التوقيع

اسم رئيس القسم: أ.د. محمد علي مراد

التاريخ: 2026 / 4 / 26

تم تدقيق الملف من قبل شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.د. وديان حبيب حميد

التاريخ: 2026 / 4 / 26

التوقيع

مصادقة السيد العميد

أ.م.د. ايمن عبد عون نزال

3. PROGRAM VISION, MISSION, AND OBJECTIVES

3.1 Program Vision

The Department of Mathematics strives to advance knowledge across all mathematical disciplines—both pure and applied—to qualify graduates to serve society and encourage them to continuously develop their scientific and intellectual capacities.

3.2 Program Mission

To prepare qualified university-level educators in mathematics, instilling principles of scientific and logical thinking, research competencies, and essential professional skills required for future community engagement and effective teaching.

3.3 Program Objectives

1. Prepare highly competent university-level educators equipped with necessary pedagogical skills to teach mathematics effectively.
2. Foster scientific attitudes among students, enabling them to pursue postgraduate studies and self-directed professional growth.
3. Equip students with analytical problem-solving skills to address scientific challenges using rigorous scientific methodologies.
4. Train students in designing, innovating, and utilizing modern instructional aids for mathematics education.
5. Continuously update and modernize academic curricula in alignment with contemporary advancements in mathematical sciences.
6. Collaborate with college departments for periodic maintenance and development of educational technology and mathematics equipment.
7. Encourage faculty and student participation in scientific conferences and workshops to stay abreast of modern teaching strategies and scientific research.

3.4 Program Accreditation & External Factors

Program Accreditation: Covers all academic courses across Ministry, University, College, and Department requirements under the approved semester system.

External Factors: Central admission policies and secondary school admission GPAs.

4. CURRICULUM STRUCTURE & CREDIT ALLOCATION

Program Structure	Number of Courses	Credits	Percentage	Notes
Institutional Requirements	13	26	18.3%	Core / Basic
College Requirements	13	33	23.2%	Core / Basic
Department Requirements	31	83	58.5%	Core / Basic
Summer Training	/			
Others	/			

5. DETAILED SEMESTER CURRICULUM SCHEDULE

YEAR 1 — SEMESTER 1

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Democracy and human rights	2	–	2	2
2	Differentiation	2	2	4	3
3	The principles of probability	2	–	2	2
4	The foundations of mathematics I	2	2	4	3
5	Numbers theory	2	–	2	2
6	Developmental psychology	3	–	3	3
7	Computer I	1	2	3	2

YEAR 1 — SEMESTER 2

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Islamic Education/Civilization	2	-	2	2
2	Arabic language	2	-	2	2
3	Computer II	1	2	3	2
4	Foundations of Education	3	-	3	3
5	The foundations of mathematics II	1	2	3	2
6	Matrices	2	-	2	2
7	Integration	2	2	4	3
8	English language	2	-	2	2

YEAR 2 — SEMESTER 1

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Advanced Differentiation	2	2	4	3
2	Advanced probability	1	2	3	2
3	Linear algebra	2	2	4	3
4	Curricula and school books	1	2	3	2
5	Baath regime crimes in Iraq	2	-	2	2
6	English Language	2	-	2	2
7	Arabic Language	2	-	2	2

YEAR 2 — SEMESTER 2

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Advanced Integration	2	2	4	3
2	graph theory	2	-	2	2
3	Geometric	3	-	3	3
4	Computer (MATLAB)	1	2	3	2
5	Educational Psychology	2	2	4	3
6	Computer	1	2	3	
7	Mathematics thinking	2	-	2	2
8	Educational Psychology	2	-	2	2

YEAR 3 — SEMESTER 1

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Numerical Analysis	3	1	4	3,5
2	Advanced statistics	3	1	4	3,5
3	Ordinary differential equations	3	1	4	3,5
4	Group Theory	2	1	3	2,5
5	Mathematical thinking	2	-	2	2
6	Educational research methodology	3	-	3	3
7	General teaching methods and applications	3	-	3	3

8	Computer III	1	2	3	2
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YEAR 3 — SEMESTER 2

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Mathematical analysis	2	2	4	3
2	graph Theory	3	-	3	
3	Sustainable development	2	-	2	3
4	Measurement and Evaluation	2	-	2	2
5	Rings theory	2	1	3	2
6	Specialized teaching methods	3	-	3	2,5
7	Curricula and school books	2	-	2	3

YEAR 4 — SEMESTER 1

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Linear programming	2	1	3	2.5
2	Topology	2	2	4	3
3	Complex analysis	2	2	4	3
4	Educational Administration and direction	2	-	2	2
5	Specialized teaching methods	3	-	3	3
6	Environmental and Health Education	2	-	2	2
7	Professional ethics	2	-	2	2
8	Classroom observation	-	4	4	2
9	Arabic Literature	2	-	2	2

YEAR 4 — SEMESTER 2

	Course Title	Credit Hours		Total Hours	Number of Units
		Theoretical	Theoretical		
1	Research Project Graduation	2	-	2	2
2	Teaching practice (practicum)	12	-	12	12

6. PROGRAM INTENDED LEARNING OUTCOMES (ILOs)

A. Knowledge and Understanding Outcomes

Program Educational Objectives	Knowledge Intended Learning Outcomes
1. Graduate qualified students in mathematics to serve as teachers in primary schools.	A1. Enable students to acquire and comprehend foundational and advanced mathematical terms and concepts.
2. Provide students with essential and advanced mathematical skills to enrich their intellectual and analytical capabilities in mathematics and its applications.	A2. Enable students to understand methods for developing, modifying, and applying educational mathematics software.
3. Enable students to recognize and apply scientific research tools during study and professional practice.	A3. Enable students to comprehend procedures for running and utilizing mathematical applications for problem-solving.
4. Prepare students for postgraduate studies by developing their intellectual, scientific, and research skills.	A4. Enable students to understand electronic publishing techniques and scientific document formatting.
5. Enable students to apply scientific methods in analyzing and solving academic and professional problems.	A5. Enable students to comprehend concepts and tools for mathematical data processing and management.
6. Introduce students to educational, psychological, and cultural sciences to achieve professional excellence and continuous development.	A6. Enable students to understand theoretical knowledge related to mathematical modeling and educational communications.
7. Align theoretical frameworks with practical applications in mathematical sciences.	A7. Enable students to master modern educational programming software and mathematical tools.
8. Enable students to explore modern teaching strategies, methods, and educational media for mathematics instruction.	A8. Enable students to acquire educational, psychological, and cultural facts and concepts required for teaching.
9. Integrate modern educational technology and digital tools into mathematics teaching.	A9. Enable students to comprehend strategies, methodologies, and instructional techniques for teaching mathematics.
10. Keep pace with recent scientific advancements in mathematics and engage in their study.	A10. Familiarize students with key academic references, authoritative texts, and literature in mathematics.
11. Activate e-learning platforms and digital tools in mathematics education.	

B. Subject-Specific Practical & Intellectual Skills

Program Educational Objectives	Skill-Based Learning Outcomes
1. Graduate qualified students in mathematics sciences to work as teachers in middle and secondary schools.	B1. Enable students to acquire skills in operating and managing mathematical software and information systems.
2. Provide students with advanced core mathematical skills to enrich their intellectual and technical capabilities in mathematics and its applications.	B2. Enable students to learn skills for designing and overseeing digital learning content and web portals.
3. Enable students to identify and utilize scientific research tools during academic study and career practice.	B3. Enable students to utilize modern educational technologies effectively in teaching mathematical sciences.
4. Prepare and qualify students for postgraduate studies by enhancing their intellectual, scientific, and research competencies.	B4. Enable students to design and innovate active learning activities that encourage student participation and engagement.
5. Enable students to apply scientific methodologies in addressing and solving academic and professional challenges.	B5. Enable students to acquire classroom management skills, classroom interaction, and modern educational problem-solving techniques.
6. Familiarize students with educational, psychological, and cultural sciences to achieve distinction and professional growth.	B6. Equip students with necessary skills to develop and refine mathematics instructional methods.
7. Harmonize theoretical trends with practical realities in mathematical sciences.	B7. Enable students to acquire skills in validating, testing, and debugging mathematical models and algorithms.
8. Enable students to learn modern teaching strategies, methods, and educational technologies for mathematics.	B8. Enable students to apply scientific methods in diagnosing and resolving academic and practical problems.
9. Employ modern technologies and educational media effectively in teaching mathematics.	B9. Enable students to acquire scientific research skills and academic writing techniques.
10. Stay abreast of modern scientific developments in mathematics and actively study them.	B10. Enable students to master designing, constructing, and grading both digital and paper-based assessments.
11. Implement e-learning approaches efficiently in the field of mathematics.	B11. Enable students to acquire lesson planning skills across macro and micro educational levels.
	B12. Enable students to utilize modern instructional aids and manipulative models for teaching mathematics.
	B13. Enable students to master effective practical teaching competencies in mathematics.

C. Values, Attitudes, and Professional Ethics

Program Educational Objectives	Value & Ethical Outcomes
1. Graduate qualified students in mathematical sciences to work as teachers in primary and middle schools.	C1. Enhance students' appreciation for the fundamental importance and role of mathematical science.
2. Provide students with advanced mathematical skills to enrich their intellectual and professional portfolio in mathematics applications.	C2. Encourage students to practice high professional, academic, and ethical conduct as a core value.
3. Enable students to understand and apply scientific research tools in study and work environments.	C3. Promote teamwork, mutual collaboration, and cooperative problem-solving among students.
4. Prepare students for postgraduate education by fostering critical thinking and research abilities.	C4. Foster a strong sense of personal responsibility and accountability during study and professional work.
5. Enable students to implement scientific methodologies in resolving academic and workplace problems.	C5. Instill respect for human dignity and universal moral principles.
6. Educate students in pedagogical, psychological, and cultural disciplines for professional excellence.	C6. Train students to respect freedom of expression, diverse thinking, and creative contributions of others.
7. Bridge theoretical mathematical principles with practical real-world applications.	C7. Train students to respect rights of learners regardless of background, culture, religion, gender, or ethnicity.
8. Enable students to master modern teaching methodologies and educational media in mathematics.	C8. Instill scientific integrity and honesty in presenting educational and mathematical information.
9. Utilize modern technologies and instructional media in teaching mathematical sciences.	C9. Cultivate a culture of transparency, academic integrity, and anti-corruption in all forms.
10. Keep pace with contemporary scientific advancements in mathematics sciences.	C10. Strengthen students' sense of national belonging, civic duty, and loyalty to their homeland.
11. Promote e-learning implementation across mathematical science curricula.	

7. TEACHING, LEARNING & ASSESSMENT STRATEGIES

7.1 Teaching and Learning Strategies

First: Teaching and Learning Strategies for Cognitive and Skill-Based Objectives

- Lecture Method & Interactive PowerPoint Presentations
- Socratic Dialogue, Class Discussions, and Brainstorming
- Smart Screen and Interactive Whiteboard Demonstrations
- Laboratory Practical Sessions for Skill Acquisition
- Student Reports, Individual & Group Projects, and Case Studies
- Collaborative Learning Groups, Workshops, and Academic Seminars
- Scientific Field Trips
- Oral Discussions and Presentations

Second: Teaching and Learning Strategies for Affective (Value-Based) Objectives

- Cooperative Learning Strategy
- Panel Discussions and Educational Storytelling
- In-Lecture Discussion Groups
- Assignments Requiring Self-Interpretation and Critical Reflection
- Value-Based Pedagogy and Explicit Explanations
- External Educational Resources, Audiovisuals, and Documentary Films
- Lectures Focused on Fostering Affective Values
- Organizing Student Seminars, Training Courses, and Workshops
- Field Visits to Related Ministries and Educational Institutions

7.2 Assessment and Evaluation Methods

- Written Examinations (Midterm, Final, and Quizzes)
- Direct Observation of Classroom Performance & Practicum Teaching
- Practical Laboratory Examinations & Software Coding Tasks
- Evaluation of Student Teaching Practicum via Field Visits
- Oral Examinations, Seminars, and Project Defense Discussions

8. FACULTY MEMBERS & CADRE DISTRIBUTION

Academic Rank	General Specialization	Specific Specialization	Special Requirements / Skills (if any)		Faculty Count	
Professor	Mathematics	Applied mathematics	None	None	Permanent Staff	
Associate Professor	Mathematics	Methods of Teaching Mathematics	None	None	Permanent Staff	
Associate Professor	Curriculum	Curricula and Teaching Methods	None	None	Permanent Staff	
Associate Professor	Mathematics	Applied mathematics	None	None	Permanent Staff	
Associate Professor	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Professor / Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Professor / Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Professor / Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Professor / Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Lecturer	Mathematics	Methods of Teaching Mathematics	None	None	Permanent Staff	
Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Applied mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Pure Mathematics	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Dynamical Systems	None	None	Permanent Staff	
Assistant Lecturer	Mathematics	Methods of Teaching Mathematics	None	None		Adjunct Lecturer

9. Faculty Professional Development

9.1 Orientation of New Faculty Members

Newly appointed faculty members participated in teaching methodology courses conducted at the college level. Additionally, a dedicated committee was formed within the department to provide guidance and continuous professional support. The department maintained ongoing supervision across all instructional and administrative duties. Faculty members were also assigned to both standing and ad-hoc departmental committees to gain essential operational expertise. Furthermore, they were integrated into teaching academic courses and managing departmental laboratories to acquire hands-on instructional experience and prepare them for upcoming academic years.

9.2 Professional Development for Academic staff

The Department of Mathematics aims to localize, cultivate, and advance human and social knowledge within society by preparing specialized human resources capable of serving the community. The department is dedicated to equipping students with comprehensive knowledge in computer science applications, training a new generation of highly qualified instructors, programmers, and software designers proficient in advanced programming languages. Graduates are prepared to contribute to the development, implementation, and optimization of robust information systems tailored to institutional requirements and public service needs

10. Admission Criteria.

1. Centralized admission system governed by the Ministry of Higher Education and Scientific Research.
2. Applicants must hold a Secondary School Certificate (Scientific Stream exclusively).
3. In-service teachers granted official academic study leave.
4. Admission is open to both male and female applicants.

11. key Information Sources for the Program

1. Official University and College Website
2. University Catalog / Bulletin
3. College Handbook
4. Academic Textbooks and Departmental Scientific Resources
5. Online and Internet Resources

12. Program Development Plan

1. Graduating highly qualified candidates in mathematics to serve as primary school teachers.
2. Equipping students with essential and advanced mathematical skills necessary to enrich their intellectual, technical, and analytical repertoire across mathematics and its diverse applications.
3. Empowering students to understand and actively utilize scientific research methodologies during their studies and future careers.
4. Preparing and qualifying students for postgraduate studies by cultivating their intellectual, academic, and research capabilities.
5. Enabling students to apply scientific methodologies and analytical frameworks to address and solve academic and professional problems.
6. Introducing students to educational, psychological, and cultural sciences to achieve academic excellence and continuous professional growth.

7. Establishing alignment and harmony between theoretical concepts and practical applications in mathematics.
8. Familiarizing students with the latest teaching strategies, pedagogical methodologies, and modern instructional tools for mathematics education.
9. Integrating modern educational technologies and interactive media into mathematics teaching.
10. Keeping pace with and conducting study/research on contemporary scientific developments in the field of mathematics.
11. Activating and expanding e-learning and digital instruction modalities within mathematics education.

13. Program Structure

Year/Level	Course Code	Course Title	Credit Hours	
			Theoretical	practical
Year 1	DEMFI1	Democracy and human rights	2	-
Year 1	ISLFI2	Islamic Education/Civilization	2	-
Year 1	ARBF12	Arabic language	2	-
Year 1	ENGFI2	English language	2	-
Year 1	COMFI1	Computer I	1	2
Year 1	EDUFI2	Foundations of Education	3	-
Year 1	MAB03D111	Differentiation	2	2
Year 1	DEVFI1	Developmental psychology	2	-
Year 1	MAB03P113	The principles of probability	2	-
Year 1	MAB03M112	The foundations of mathematics I	2	2
Year 1	MAB03M112	The foundations of mathematics II	1	2
Year 1	MAB03NT123	Numbers theory	3	-
Year 1	MAB03M128	Matrices	2	-
Year 1	MAB03I121	Integration	2	2
Year 1	MAB03MO128	Computer II	1	1
Year 2	ENGSE3	English Language	2	-
Year 2	EDPSE4	Educational Psychology	3	-
Year 2	CLTSE4	Psychology of classroom thinking and teaching	2	-
Year 2	MAB03AD211	Advanced Differentiation	2	2
Year 2	MAB03AP212	Advanced probability	1	2
Year 2	MAB03LA213	Linear algebra	2	2
Year 2	MAB03MO227	Computer (mattlap)	1	2
Year 2	MAB03AI221	Advanced Integration	2	2

Year 2	MAB03G222	Geometric	3	-
Year 2	COMSE4	Computer	2	1
Year 2	ARBSE	Arabic II	2	-
Year 2	MAB03DT322	graph theory	2	-
Year 2	MAB03MT313	Mathematics thinking	2	-
Year 2	BAASE3	Baath regime crimes in Iraq	2	-
Year 2	CURSE3	Curricula and school books	2	-
Year 3	MAB03O228	Computer III	1	2
Year 3	GEMTH501	General teaching methods and applications	3	-
Year 3	ACRTH6	Educational research methodology	2	-
Year 3	MEATH503	Measurement and Evaluation	2	-
Year 3	Coll 3212	Curricula and school books	2	-
Year 3	MAB03NA311	Numerical Analysis	3	1
Year 3	Math 3318	Mathematical thinking	2	-
Year 3	MAB03ODE314	Ordinary differential equations	2	2
Year 3	MAB03GT312	Group Theory	2	1
Year 3	MAB03R323	Rings	2	1
Year 3	MAB03STM324	Specialized teaching methods	2	2
Year 3	MAB03MA321	Mathematical analysis	1	2
Year 3	Math 3326	graph Theory	3	-
Year 3	SUSTH6	Sustainable development	2	
Year 3	MAB03AS223	Advanced statistics	2	2
Year 4	Coll 4215	Educational Administration and direction	2	-
Year 4	MAB03TP421	Application	-	12
Year 4	MAB03LP411	Linear programming	2	1
Year 4	MAB03T412	Topology	2	2
Year 4	MAB03CA413	Complex analysis	2	2
Year 4	SMDFO701	Specialized teaching methods	3	-
Year 4	MAB03GR415	Research Project Graduation	-	2
Year 4	PROFO7	Professional ethics	2	-

Year 4	PRFOLA1	Arabic Literature	2	-
Year 4	ENVFI2	Environmental and Health Education	2	-

14. CURRICULUM SKILLS MAP

Please place a checkmark (✓) in the boxes corresponding to the individual program learning outcomes subject to assessment

/ Year Level	Course Code	Course Title	Type	Required Program Learning Outcomes (PLOs)															
				A. Knowledge& Cognitive Outcomes				B. Practical& Specialized Skills				C. Affective& Value Outcomes				D. General& Transferable Skills			
				A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D 4
Year 1	DEMF1	Democracy and human rights	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	ISLFI2	Islamic Education I	Core	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Year 1	ARBF12	Arabic Language	Core	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	ENGFI2	English Language	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Year 1	COMFI1	Computer I+Windows	Core	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Year 1	EDUFI2	Foundations of education	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Year 1	MAB03D111	Differentiation	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Year 1	DEVFI1	The principles of probability	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	MAB03P113	The foundations of mathematics I	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	MAB03M112	The foundations of mathematics II	Core	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	MAB03M112	Numbers theory	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		
Year 1	MAB03NT123	Matrices	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 1	MAB03M128	Integration	Core	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Year 1	MAB03I121	Word+Powerpoint	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Year 2	MAB03MO128	English II	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
Year 2	ENGSE3	Educational Psychology	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 2	EDPSE4	Psychology of classroom thinking and teaching	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year 2	CLTSE4	Advanced	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓

		Differentiation																	
Year 2	MAB03AD211	Advanced probability	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 2	MAB03AP212	Linear algebra	Core	√	√	√	√	√			√	√	√	√	√	√	√	√	√
Year 2	MAB03MO227	Computer	Core	√	√	√	√	√	√	√	√	√	√	√	√	√			√
Year 2	MAB03AI221	Advanced Integration	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 2	MAB03G222	Geometric	Core	√	√	√			√	√	√	√	√	√	√	√	√	√	√
Year 2	COMSE4	Computer	Core	√	√	√	√	√	√	√	√	√	√	√			√	√	√
Year 2	ARBSE	Arabic	Core	√	√	√	√	√	√	√	√	√	√	√			√	√	√
Year 2	MAB03DT322	Graph theory	Core	√	√	√	√	√	√	√	√	√	√	√			√	√	√
Year 2	MAB03MT313	Mathematics thinking	Core	√	√	√	√	√	√	√	√	√	√	√			√	√	√
Year 2	BAASE3	Baath regime crimes in Iraq	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 2	CURSE3	General teaching methods and applications	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 2	MAB03MO227	Curricula and school books	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Univ 3113	Computer III	Core	√	√	√			√	√	√	√		√	√	√	√	√	√
Year 3	Coll 3209	General teaching methods and application	Core	√	√	√	√	√	√	√	√	√	√	√			√	√	√
Year 3	Coll 3210	Measurement and evaluation	Core	√	√	√	√	√	√	√	√	√			√	√	√	√	√
Year 3	Coll 3211	Measurement and Evaluation	Core	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
Year 3	Coll 3212	Curricula and school books	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3317	Numerical Analysis	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3318	Mathematical thinking	Core	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√
Year 3	Math 3320	Ordinary differential equations	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3321	Groups Theory	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3323	Rings	Core	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3324	I Specialized teaching methods	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3	Math 3325	Mathematical analysis	Core	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√
Year 3	Math 3326	graph Theory	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3		Sustainable development	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Year 3		Advanced statiatitics	Core																
Year 4	Univ 4114	Computer IIII	Core	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√

[illegible]

Course Description Form

Course Name: Democracy and Human Rights

Course Code: MAB03HR119

Semester / Year: First / First Year

Date of Description Preparation: 1/10/2025

Available Attendance Modes: Mandatory (In-Person)

Total Study Hours: 30 hours **Number of Units:** 2

Course Coordinator: Asst. Prof. Dr. Marwan Salim Nouri

Email: basichist1te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- Learn (the definition of human rights and their characteristics)
- Learn Islam's position on human rights
- Learn the classifications of human rights
- Learn collective human rights
- Learn human rights during times of war and international and domestic conflicts
- Learn administrative corruption and its impact on human rights

Teaching and Learning Strategies

Cooperative Learning Strategy: Discussion based on identifying the basic concepts of the topic and then beginning instruction. This is a method that relies on dividing students into small heterogeneous groups of (4-6) members per group. Students in each group cooperate in explaining and understanding the topic, with the professor acting as a guide and mentor.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	-	Definition of Human Rights	Lecture	Formative Assessment
2	2	-	Enumeration of	Lecture	Formative

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method	
			Human Rights Characteristics		Assessment	
3	2	Learn Islam's position on human rights	Islam's Position on Human Rights	Lecture	Formative Assessment	
4	2	-	Islam's Position on Human Rights	Lecture	Formative Assessment	
5	2	-	Learn classifications of human rights	Classifications of Human Rights	Lecture	Formative Assessment
6	2	-	Learn classifications of human rights	Classifications of Human Rights	Lecture	Formative Assessment
7	2	First Month Exam - Various tests and problem solving related to the topic				
8	2	-	Learn collective human rights	Collective Human Rights	Lecture	Formative Assessment
9	2	-	Learn collective human rights	Collective Human Rights	Lecture	Formative Assessment
10	2	Learn human rights during times of war and international and domestic conflicts	Human Rights during Times of War and International and Domestic Conflicts	Lecture	Formative Assessment	
11	2	-	Learn human rights during times of war and	Human Rights during Times of War and	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method	
			international and domestic conflicts	International and Domestic Conflicts		
12	2	-	Learn administrative corruption and its impact on human rights	Administrative Corruption and Its Impact on Human Rights	Lecture	Formative Assessment
13	2	-	Learn administrative corruption and its impact on human rights	Administrative Corruption and Its Impact on Human Rights	Lecture	Formative Assessment
14	2	-	Learn administrative corruption and its impact on human rights	Administrative Corruption and Its Impact on Human Rights	Lecture	Formative Assessment
15	2	Second Month Exam - Objective tests and problem solving				

Course Assessment

Learning and Teaching Resources

1	Required Prescribed Books	None
2	Main References (Sources)	Human Rights Sources / Faculty of Law, Benha University, Egypt, issued on 1/2/2010. Transparency International - Global Corruption Report 2007. Lebanese Association for the Promotion of Transparency / No to Corruption - Corruption

1	Required Prescribed Books	None
		Book - 1st Edition - 2005 - Technopress Press - Lebanon
a	Recommended Books and References (Scientific Journals, Reports, etc.)	Human Rights Law Sources / Al-Wasat Website, Issue 378, Friday, September 19, 2003. Ahmed Helmy / Article / Individual Behavior and Human Rights / Arab Human Rights Journal / Issue 10 / 2007 / Dubai / International Human Rights Organization Website. Dr. Suleiman Abdul-Mun'im - The Phenomenon of Corruption / A Study on the Compatibility of Arab Legislation with the UN Convention against Corruption. p.17.
b	Electronic References, Internet Sites, etc.	Fares Al-Shihabi - Administrative Reform Cannot Be Achieved Without Radical Change in Thought, Objectives, and Laws / The Public Sector from the Perspective of Economic Liberalism - Article available on the website www.mafhoum.com

Course Description Form

Course Name: Differential Calculus

Course Code: MAB03D111

Semester / Year: First / First Year

Date of Description Preparation: 1/10/2025

Available Attendance Modes: Mandatory (In-Person)

Total Study Hours: 60 hours **Number of Units:** 3

Course Coordinator: Asst. Lect. Fatin Abdulrahman Hamid

Email: basicmath17te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. The concept of real numbers and their properties, absolute value, inequalities and their solutions
2. The concept of functions, domain and range, continuous and discontinuous functions, uniform continuity
3. Differentiation and its rules, and some theorems such as Rolle's Theorem and the Mean Value Theorem
4. Derivatives of trigonometric, exponential, and logarithmic functions
5. Concepts of differentiation and their use in obtaining local maxima and minima, inflection points, and graphing functions

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

A1- The student should comprehend the concept of real numbers and their properties, absolute value, inequalities and their solutions.

A2- The student should know the concept of functions, domain and range, continuous and discontinuous functions, uniform continuity.

A3- The student should know differentiation and its rules, and some theorems such as Rolle's Theorem and the Mean Value Theorem.

A4- The student should know derivatives of trigonometric, exponential, and logarithmic functions.

A5- The student should comprehend concepts of differentiation and their use in obtaining local maxima and minima, inflection points, and graphing functions.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

B1 – Real numbers and their properties

B2 – Rules of differentiation

B3 – Comprehend concepts of differentiation and their use in obtaining local maxima and minima, inflection points

B4 – Graphing functions

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

The student should be able to:

C1- Define differentiation and its properties

C2- Define the rules of differentiation

C3- Define differentiation of trigonometric, exponential, and logarithmic functions
C4- Graph functions

Teaching and Learning Methods

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

D1- Employ acquired skills in teaching mathematical knowledge to basic education students.

D2- Select examples from the basic education mathematics curriculum, each with skills addressed in the course.

D3- Evaluate the extent to which basic education students acquire application skills.

D4- Construct tests specific to mathematical thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	4	Concept of real numbers and their properties with examples	Concept of real numbers and their properties with examples	Discussion and Questioning	Formative Assessment
2	4	Inequalities and their solutions with examples	Inequalities and their solutions with examples	Discussion and Questioning	Formative Assessment
3	4	Concept of function, domain and range with examples	Concept of function, domain and range with examples	Discussion and Questioning	Formative Assessment
4	4	Continuity and uniform continuity with examples	Continuity and uniform continuity with examples	Discussion and Questioning	Formative Assessment
5	4	Local minima and maxima with examples	Local minima and maxima with examples	Discussion and Questioning	Formative Assessment
6	4	Monthly Exam	Monthly Exam	-	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
7	4	Concept of differentiation and some fundamental theorems	Concept of differentiation and some fundamental theorems	Discussion and Questioning	Formative Assessment
8	4	Composition of functions and higher-order derivatives	Composition of functions and higher-order derivatives	Discussion and Questioning	Formative Assessment
9	4	Rolle's Theorem and the Mean Value Theorem	Rolle's Theorem and the Mean Value Theorem	Discussion and Questioning	Formative Assessment
10	4	Derivatives of trigonometric functions with examples	Derivatives of trigonometric functions with examples	Discussion and Questioning	Formative Assessment
11	4	Monthly Exam	Monthly Exam	-	Formative Assessment
12	4	Derivatives of exponential and logarithmic functions	Derivatives of exponential and logarithmic functions	Discussion and Questioning	Formative Assessment
13	4	Using differentiation concepts to obtain maxima	Using differentiation concepts to obtain maxima	Discussion and Questioning	Formative Assessment
14	4	Graphing functions	Graphing functions	Discussion and Questioning	Formative Assessment

Infrastructure

1	Required Prescribed Books	None
2	Main References (Sources)	- Calculus of Integration and Differentiation. Translated by Dr. Ali Aziz and others - Calculus of Differentiation and Integration. Authored by Dr. Ada Ghassan Naoum and Dr. Basil Al-Hashimi

1	Required Prescribed Books	None
a	Recommended Books and References (Scientific Journals, Reports, etc.)	- Calculus: Thomas, Jr., ... - Utilizing periodicals and sources related to the course
b	Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
2. The course is developed according to requirements that emerge from curriculum development in the global system.

Course Description Form

Course Name: Principles of Probability

Course Code: MAB03P113

Available Attendance Modes: Mandatory (In-Person)

Semester: First Year **First Year**

Total Study Hours: 30 hours **Number of Units:** 2

Date of Description Preparation: 1/10/2025

Course Coordinator: Dr. Yasmin Masoud Abdul Hassan

Email: basicmah10te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Understanding the experiment, sample space, events and their types
2. Distinguishing permutations and combinations
3. Explaining the meaning of probability and its properties, laws of probability
4. Understanding conditional probability
5. Analyzing probability and combinatorial analysis
6. Applying Bayes' Theorem and its applications

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

A1- Knowledge and understanding

A2- Enable students to acquire knowledge and understanding of the meaning of experiment, sample space,

events and their types.

A3- Enable students to acquire knowledge and understanding of topics in permutations and combinations.

A4- Enable students to acquire knowledge and understanding of the meaning of probability and its properties, laws of probability.

A5- Enable students to acquire knowledge and understanding of Bayes' Theorem and its applications.

B. Skills Objectives of the Course

B1 – Enumerates types of events

B2- Distinguishes between permutations and combinations

B3- Comprehends the meaning of probability and its properties and laws

B4 – Understands probability and combinatorial analysis

B5- Distinguishes applications of Bayes' Theorem

Teaching and Learning Methods

1- Provide students with the fundamentals and topics related to principles of probability.

2- Clarify and explain the course material.

3- Require students to visit the library and review the material.

4- Improve students' skills through visiting electronic sites to gain additional knowledge of the course material.

5- Use lecture, presentation, questioning, and discussion methods in some topics that require discussion.

Assessment Methods

1- Daily tests with specific questions.

2- Assign grades for homework and class participation.

3- Assign students to complete research and reports on the course material.

4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

C1- Appreciate the importance of studying the subject and its life applications.

C2- Understand the importance of events and their types.

Teaching and Learning Methods

1- Use of presentation methods.

2- Drawing illustrative diagrams.

3- Brainstorming method.

Assessment Methods

- Analytical exam to measure the student's ability to think, analyze, and deduce.
- Request comparisons between types of events.
- Writing research on laws of probability.
- Daily exams with intellectual and deductive questions.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

- D1- Skills in using references and terminology.
D2- Skills in collecting and analyzing data on the topic.
D3- Skills in utilizing available resources.
D4- Skills in making comparisons on the topic.
D5- Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	Defines the experiment and sample space	Experiment, Sample Space, Events and Their Types	Discussion and Questioning	Formative Assessment
2	2	Enumerates types of events	Experiment, Sample Space, Events and Their Types	Discussion and Questioning	Formative Assessment
3	2	Examples in permutations	Permutations and Combinations	Discussion and Questioning	Formative Assessment
4	2	Examples in combinations	Permutations and Combinations	Discussion and Questioning	Formative Assessment
5	2	First Month Exam - Various tests			
6	2	Defines probability	Meaning of Probability and its Properties, Laws of Probability	Discussion and Questioning	Formative Assessment
7	2	Enumerates properties of probability	Meaning of Probability and its Properties, Laws of Probability	Discussion and Questioning	Formative Assessment
8	2	Writes laws of probability	Meaning of Probability and its Properties, Laws of Probability	Discussion and Questioning	Formative Assessment
9	2	Provides examples in conditional probability	Conditional Probability	Discussion and Questioning	Formative Assessment
10	2	Defines probability	Probability and Combinatorial Analysis	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
11	2	Defines combinatorial analysis	Probability and Combinatorial Analysis	Discussion and Questioning	Formative Assessment
12	2	Mentions examples of combinatorial analysis	Probability and Combinatorial Analysis	Discussion and Questioning	Formative Assessment
13	2	Discusses the foundations of Bayes' Theorem	Bayes' Theorem and Its Applications	Discussion and Questioning	Formative Assessment
14	2	Mentions applications of Bayes' Theorem	Bayes' Theorem and Its Applications	Discussion and Questioning	Formative Assessment
15	2	Second Month Exam - Objective tests			

Infrastructure

1	Required Prescribed Books	None
2	Main References (Sources)	Introduction to Statistics. Authored by Dr. Khash'a Mahmoud Al-Rawi. 2000, 2nd Edition
a	Recommended Books and References (Scientific Journals, Reports, etc.)	Theory and Problems in Probability. Dr. Seymour Lipschutz
b	Electronic References, Internet Sites, etc.	Mathematics-related websites

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Course Name: Foundations of Mathematics 1

Course Code: MAB03M112

Available Attendance Modes: Mandatory (In-Person)

Semester: First Year **First Year**

Total Study Hours: 60 hours **Number of Units:** 3

Date of Description Preparation: 1/10/2025

Course Coordinator: Asst. Lect. Yusuf Wathiq Amin

Email: basicmath13te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn the principles of mathematical logic, propositions, truth tables, logical equivalence, algebra of propositions, mathematical converses, quantifiers, Hilbert's execution on open expressions.
- 2- Learn sets, operations on sets, and some theorems.
- 3- Learn relations and the Cartesian product.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

A1- Knowledge and understanding.

A2- Enable students to acquire knowledge and understanding of the principles of mathematical logic.

A3- Enable students to acquire knowledge and understanding of operations on sets.

A4- Enable students to acquire knowledge and understanding of relations.

A5- Enable students to acquire knowledge and understanding of applications of the Cartesian product.

B. Skills Objectives of the Course

B1 – Skills in principles of logic.

B2- Skills in operations on sets.

B3- Skills in relations and interpretation of theorems.

B4 – Skills in applications of the Cartesian product.

Teaching and Learning Methods

1- Clarify and explain the course material.

2- Model presentation method.

3- Lecture method.

4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

- C1- Appreciate the importance of studying the subject and its life applications.
C2- Understand the importance of operations on sets.

Teaching and Learning Methods

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

- D1- Skills in using references and terminology.
D2- Skills in collecting and analyzing data on the topic.
D3- Skills in interpreting theorems.
D4- Skills in making comparisons.
D5- Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	4	Learn propositions	Principles of Mathematical Logic	Lecture	Formative Assessment
2	4	Learn truth tables	Principles of Mathematical Logic	Lecture	Formative Assessment
3	4	Learn logical equivalence	Principles of Mathematical Logic	Lecture	Formative Assessment
4	4	Learn algebra of propositions	Principles of Mathematical Logic	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
5	4	Learn mathematical converses	Principles of Mathematical Logic	Lecture	Formative Assessment
6	4	First Month Exam - Various tests			
7	4	Operations on sets	Sets, Operations on Sets, and Some Theorems	Lecture	Formative Assessment
8	4	Operations on sets	Sets, Operations on Sets, and Some Theorems	Lecture	Formative Assessment
9	4	Operations on sets	Sets, Operations on Sets, and Some Theorems	Lecture	Formative Assessment
10	4	Theorems	Sets, Operations on Sets, and Some Theorems	Lecture	Formative Assessment
11	4	Theorems	Sets, Operations on Sets, and Some Theorems	Lecture	Formative Assessment
12	4	Relations	Relations and the Cartesian Product	Lecture	Formative Assessment
13	4	Relations	Relations and the Cartesian Product	Lecture	Formative Assessment
14	4	Cartesian product	Relations and the Cartesian Product	Lecture	Formative Assessment
15	4	Second Month Exam - Objective tests and problem solving			

Infrastructure

1	Required Prescribed Books	None
2	Main References (Sources)	- Foundations of Mathematics. Dr. Hadi Jaber and others - Foundations of Mathematics. Dr. Adel Ghassan Naoum and Dr. Basil Al-Hashimi
a	Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic
b	Electronic References, Internet Sites, etc.	Mathematics-related websites

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Course Name: Number Theory

Course Code: MAB03NT123

Available Attendance Modes: Mandatory (In-Person)

Semester: First **Year:** First Year

Total Study Hours: 30 hours **Number of Units:** 2

Date of Description Preparation: 1/10/2025

Course Coordinator: Asst. Lect. Fatima Yasin Taha

Email: basicmathte8@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

- 1- Learn ancient numeral systems, natural numbers, mathematical induction.
- 2- Learn integers, properties of integer ordering, well-ordering, prime numbers.
- 3- Learn some divisibility algorithms, greatest common divisor, least common multiple, prime factorization.
- 4- Learn the Fundamental Theorem of Arithmetic, some special numbers (Pythagorean, abundant, deficient, perfect, amicable).

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

- A1- Knowledge and understanding.
- A2- Enable students to acquire knowledge and understanding of ancient numeral systems.
- A3- Enable students to acquire knowledge and understanding of integers.
- A4- Enable students to acquire knowledge and understanding of algorithms.
- A5- Enable students to acquire knowledge and understanding of the Fundamental Theorem of Arithmetic.

B. Skills Objectives of the Course

- B1 – Skills in ancient numeral systems.
- B2- Skills in properties of integers.
- B3- Skills in some algorithms.
- B4 – Skills in the Fundamental Theorem of Arithmetic.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

- C1- Appreciate the importance of studying the subject and its life applications.
- C2- Understand the importance of mathematical induction.

Teaching and Learning Methods

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

- D1- Skills in using references and terminology.
- D2- Skills in collecting and analyzing data on the topic.
- D3- Skills in interpreting theorems.
- D4- Skills in making comparisons.
- D5- Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	3	Natural numbers	Ancient Numeral Systems	Lecture	Formative Assessment
2	3	Mathematical induction	Ancient Numeral Systems	Lecture	Formative Assessment
3	3	Properties of integer ordering	Integers	Lecture	Formative Assessment
4	3	Well-ordering	Integers	Lecture	Formative Assessment
5	3	Prime numbers	Integers	Lecture	Formative Assessment
6	3	First Month Exam - Various tests and problem solving related to the topic			
7	3	Divisibility of some algorithms	Algorithms	Lecture	Formative Assessment
8	3	Greatest common divisor	Algorithms	Lecture	Formative Assessment
9	3	Least common multiple	Algorithms	Lecture	Formative Assessment
10	3	Prime factorization	Algorithms	Lecture	Formative Assessment
11	3	Pythagorean	Fundamental Theorem of Arithmetic	Lecture	Formative Assessment
12	3	Abundant and deficient	Fundamental Theorem of Arithmetic	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
13	3	Perfect	Fundamental Theorem of Arithmetic	Lecture	Formative Assessment
14	3	Amicable	Fundamental Theorem of Arithmetic	Lecture	Formative Assessment
15	3	Second Month Exam - Objective tests and problem solving			

Infrastructure

Required Prescribed Books

None

Main References (Sources)

Introduction to Number Theory by Faleh bin Imran bin Abdul Hassan Al-Duwaisiri, Al-Nazariyat Library

Recommended Books and References (Scientific Journals, Reports, etc.)

Utilizing any sources related to the topic

Electronic References, Internet Sites, etc.

Seriyamath

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Course Name: Computer

Course Code: MAB03MO1110

Available Attendance Modes: Mandatory (In-Person)

Semester: First **Year:** First Year

Total Study Hours: 45 hours **Number of Units:** 2

Date of Description Preparation: 1/10/2025

Course Coordinator: Dr. Jasib Hassan Abboud
Email: Chasibhassan@uodiyala.edu.iq

Course Objectives

- 1- Learn the basic elements in Visual Basic.
- 2- Learn Form design – concept of properties and how to adjust them.
- 3- Learn using writing tools.
- 4- Learn variables and constants.
- 5- Learn Branching – IF-THEN, Select Case statements.
- 6- Learn databases and their definition – Table-Records-Fields.
- 7- Learn Menu Editor definition and design, and modification of some properties.
- 8- Learn dealing with images and shapes.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

- A1- Knowledge and understanding.
- A2- Enable students to acquire knowledge and understanding of basic elements in Visual Basic.
- A3- Enable students to acquire knowledge and understanding of variables and constants.
- A4- Enable students to acquire knowledge and understanding of databases and their definition – Table-Records-Fields.
- A5- Enable students to acquire knowledge and understanding of dealing with images and shapes.

B. Skills Objectives of the Course

- B1 – Skills in Form design.
- B2- Skills in using writing tools.
- B3- Skills in dialog boxes.
- B4 – Skills in data entry validation.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

- C1- Appreciate the importance of studying the subject and its life applications.
- C2- Importance of how to use Visual Basic technology.

Teaching and Learning Methods

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

- D1- Skills in using references and terminology.
D2- Skills in collecting and analyzing data on the topic.
D3- Skills in interpreting theorems.
D4- Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	3	Learn design time and execution time – event-driven programming – using Help – how to enter and exit	Basic Elements in Visual Basic	Explanation and Clarification	Formative Assessment
2	3	Illustrative examples – writing Code – saving and retrieving project – practical project	Form Design – Concept of Properties and How to Adjust Them	Explanation and Clarification	Formative Assessment
3	3	Displaying messages – difference between (Hide/Show) – (Load/Unload) – adding new form – how to call the form	Using Writing Tools	Explanation and Clarification	Formative Assessment
4	3	Using Public Variables – ability to add Standard Module to the current project to store procedures	Variables and Constants	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
5	3	IF-THEN, Select Case statements and their uses – FOR-NEXT, DO-LOOP statements and giving applied projects and examples	Branching	Explanation and Clarification	Formative Assessment
6	3	Definition of Client/Server systems – using Data Control	Databases and their definition – Table-Records-Fields	Explanation and Clarification	Formative Assessment
7	3	First Periodic Exam - Solving the exam and discussing errors with students			
8	3	Dialog Boxes – definition and types	Dialog Boxes	Explanation and Clarification	Formative Assessment
9	3	Data entry validation – using Lost Focus methods	Data Entry Validation	Explanation and Clarification	Formative Assessment
10	3	Runtime Error Tracking – error tracking through Routines	Runtime Error Tracking	Explanation and Clarification	Formative Assessment
11	3	Menu Editor definition and design, modification of some properties – configuring Tool Bar – Linking Forms	Menu Editor	Explanation and Clarification	Formative Assessment
12	3	Dealing with images and shapes – some important commands for drawing geometric shapes – dealing with file, folder, and disk viewing tools	Dealing with Images and Shapes	Explanation and Clarification	Formative Assessment
13	3	Applied project and how to use Visual Basic technology	Applied Project	Explanation and Clarification	Formative Assessment
14	3	Second Periodic Exam - Solving the exam and discussing errors			

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		with students			
15	3	General Review			

Infrastructure

1	Required Prescribed Books	None
2	Main References (Sources)	
a	Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic
b	Electronic References, Internet Sites, etc.	Seriyamath, Al-Muhtarif, Computer World

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Course Name: Matrices

Course Code: MAB03M128

Available Attendance Modes: Mandatory (In-Person)

Semester: Second **Year:** First Year

Total Study Hours: 30 hours **Number of Units:** 2

Date of Description Preparation: 1/10/2025

Course Coordinator: Prof. Dr. Mohammed Ali Murad

Email: basicmath3te@uodiyala.edu.iq

Dr. Israa Amer

Email: basicmath7te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of matrix, definition with illustrative examples.

2. Types of matrices (diagonal, identity, scalar, zero) with illustrative examples.
3. Matrix addition, multiplication, subtraction with illustrative examples for each.
4. Linear systems, definition with illustrative examples.
5. Methods of solving linear systems (Gaussian elimination method, Cramer's rule, Gauss-Jordan method).
6. Determinant of a matrix and methods of extraction according to matrix type.
7. Transpose of a matrix, trace of a matrix, inverse of a matrix in terms of definition and examples.
8. Symmetric and skew-symmetric matrices with illustrative examples.
9. Properties of transpose, inverse, symmetry, and trace.
10. A set of theorems on the above topics.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

- A1- The student should understand the meaning of a matrix.
- A2- The student should know the types of matrices (scalar, identity, zero, diagonal).
- A3- The student should know the properties of matrices.
- A4- The student should know operations on matrices.
- A5- The student should know linear systems and how to solve them using matrices.
- A6- The student should prove properties of matrices.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

- B1 – Matrices and their types.
- B2 – Trace, transpose, and inverse of a matrix.
- B3 – Operations on matrices.
- B4 – Matrices and their dimensions.
- B5 – Methods and techniques for solving systems.
- B6 – Linear systems through matrices.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration).

Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.

2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

The student should be able to:

C1- Define the importance of matrices in life and connect them to reality.

C2- Form positive attitudes toward the subject.

C3- Develop a spirit of cooperation among students during homework solving.

Second Year – Third Semester Program Description

Year \ Level	Course Code	Course Name	Credit Hours		Total Hours	Number of Units
			Theoretical	Practical		
Second \ Third	MAB03AD211	Advanced Differential Calculus	2	2	4	3
	MAB03AP212	Advanced Probability	1	2	3	2
	MAB03LA213	Linear Algebra	2	2	4	3
	CURSE3	Curricula and Textbooks	1	2	3	2
	MAB03D226	Crimes of the Ba'ath Regime in Iraq	2	-	2	2
	ENGSE3	English Language	2	-	2	2
	ARBF12	Arabic Language	2	-	2	2
Total			12	8	20	16

Second Year – Fourth Semester Program Description

Year \ Level	Course Code	Course Name	Credit Hours		Total Hours	Number of Units
			Theoretical	Practical		
Second \ Fourth	MAB03AI221	Advanced Integral Calculus	2	2	4	3
	MAB03DT322	Graph Theory	2	-	2	2
	MAB03G222	Geometry	3	-	3	3
	MAB03MO227	Computer (MATLAB)	1	2	3	2
	MA03SE228	Psychology of Education and Classroom Thinking	2	2	4	3
	COMSE4	Computer (Internet, PowerPoint, Word)	1	2	3	2
	MAB03MT313	Mathematical Thinking	2	-	2	2
	EDPSE4	Educational Psychology	2	-	2	2
Total			15	8	23	19

Course Description Form

Field	Details
1. Course Name	Advanced Differential Calculus
2. Course Code	MAB03AD211
3. Available Attendance Modes	Mandatory (In-Person)
4. Semester / Year	Third / Second Year
5. Total Study Hours	60 hours / Number of Units: 3
6. Date of Description Preparation	1/10/2025
7. Course Coordinator	Asst. Prof. Dr. Hussein Abdul Hussein Abbas
Email	basicmathte@uodiyala.edu.iq

Course Objectives

- 1- Learn the rules of derivatives and add inverse trigonometric functions and their differentiation.
- 2- Learn a special study of the function $f(x,y)$ in R^2 , its laws, domain, and codomain.
- 3- Learn the study of continuity and limit of functions in R^2 .
- 4- Learn graphing the function $f(x,y)$.
- 5- Learn using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables.
- 6- Learn a special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the function $f(x,y)$ in R^2 , its laws, domain, and codomain.

Code	Objective
A3	Enable students to acquire knowledge and understanding of continuity and limits of functions in $\mathbb{R}^2$.
A4	Enable students to acquire knowledge and understanding of graphing the function $f(x,y)$.
A5	Enable students to acquire knowledge and understanding of using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in graphing the function $f(x,y)$.
B2	Skills in using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables.
B3	Skills in the special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in making comparisons.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Quick review of differentiation rules	Quick review of differentiation rules and addition of inverse trigonometric functions and their differentiation	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
2	4	Quick review of adding inverse trigonometric functions and their differentiation	Quick review of differentiation rules and addition of inverse trigonometric functions and their differentiation	Lecture	Formative Assessment
3	4	Special study of the function $f(x,y)$ in R^2	Special study of the function $f(x,y)$ in R^2 , its laws, domain, and codomain	Lecture	Formative Assessment
4	4	Special study of the laws of the function $f(x,y)$ in R^2 , its domain, and codomain	Special study of the function $f(x,y)$ in R^2 , its laws, domain, and codomain	Lecture	Formative Assessment
5	4	Learn continuity and limits of functions in R^2	Study of continuity and limits of functions in R^2	Lecture	Formative Assessment
6	4	First Month Exam – Various tests and problem-solving related to the topic			
7	4	Learn how to graph the function $f(x,y)$	How to graph the function $f(x,y)$	Lecture	Formative Assessment
8	4	Learn using (GeoGebra) for graphing functions of the type $y = \ln x$	Using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables	Lecture	Formative Assessment
9	4	Using (GeoGebra) for graphing functions of the type $y = e^x$	Using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
10	4	Using (GeoGebra) for graphing functions of the type $y = \sin x$ and other examples of quadratic and cubic variables	Using (GeoGebra) for graphing functions of the type $y = \ln x$, $y = e^x$, $y = \sin x$, and other examples of quadratic and cubic variables	Lecture	Formative Assessment
11	4	Special study of derivatives of $y = \sinh x$	Special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws	Lecture	Formative Assessment
12	4	Special study of derivatives of $y = \cosh x$	Special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws	Lecture	Formative Assessment
13	4	Special study of derivatives of $y = \operatorname{sech} x$ and others, along with some laws	Special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws	Lecture	Formative Assessment
14	4	Special study of derivatives of other laws	Special study of derivatives of $y = \sinh x$, $y = \cosh x$, $y = \operatorname{sech} x$, and others, along with some laws	Lecture	Formative Assessment
15	4	Second Month Exam – Objective tests and problem-solving			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Calculus. Thomas Jr. ...
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic
b. Electronic References, Internet Sites, etc.	Seriyamath

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Advanced Probability
Course Code	MAB03AP212
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Ghosoun Mohammed Hamadi
Email	basicmathte4@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

1. Understand the concept of random variables in detail.
2. Understand random variable distributions (discrete, continuous) and their applications.
3. Understand some important distributions.
4. Understand the binomial distribution and its applications.
5. Understand the Poisson distribution and its applications.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Learner's ability to understand random variables.
A2	Learner's ability to understand some random distributions.
A3	Write probability distributions according to rules.
A4	Deal in detail with some special discrete probability distributions.
A5	Deal in detail with some special continuous probability distributions.
A6	Represent probability distributions graphically.

B. Skills Objectives of the Course

Code	Skill
B1	Planning skills.
B2	Implementation skills.
B3	Evaluation skills.

Teaching and Learning Methods

- Lecture method (presentation).
- Dialogue and discussion method.

Assessment Methods

- Achievement exams (daily, monthly, semester).

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of random variables in daily life.
C2	Understand the beauty and consistency of probability topics.
C3	Understand the directions of the subject matter.
C4	Understand the aesthetic values of the subject matter.

Teaching and Learning Methods (Affective)

- Lecture method (presentation).
- Dialogue and discussion method.

Assessment Methods (Affective)

- Achievement exams (daily, monthly, semester).

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Learner's ability to deal positively with the course material.
D2	Raise the scientific and practical level of the learner.
D3	Give the learner an opportunity to demonstrate their talent.
D4	Learner's ability to perform computational skills in dealing with the course material.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Concept of probability distribution of a random variable (continuous and	Probability Distributions	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		discrete) and probability distribution function			
2	4	Continuous probability distribution (definition + examples), Discrete probability distribution (definition + examples)	Probability Distributions (Continuous and Discrete)	Discussion and Questioning	Formative Assessment
3	4	Binomial distribution (definition + examples), Poisson distribution (definition + examples)	Some Discrete Distributions	Discussion and Questioning	Formative Assessment
4	4	Concept, definition, equation of the normal curve and some applications	The Normal Curve	Discussion and Questioning	Formative Assessment
5	4	Area under the normal curve with applied examples and use of statistical tables	Normal Distribution as an Example of Continuous Distributions	Discussion and Questioning	Formative Assessment
6	4	Monthly Exams (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
7	4	Concept of sample designs, sampling distribution of the mean of a single sample drawn from a normal population	Sampling Theory	Discussion and Questioning	Formative Assessment
8	4	Sampling distribution of the difference between two arithmetic means and testing the	Sampling Theory	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		proportion for a single sample			
9	4	Steps of hypothesis testing, tests related to means and proportions	Hypothesis Testing	Discussion and Questioning	Formative Assessment
10	4	Concept of standard normal distribution (z), how to transform normal distribution to standard normal distribution (z)	Relationship between Normal Distribution and Standard Normal Distribution	Discussion and Questioning	Formative Assessment
11	4	Monthly Exam (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
12	4	Concept + definition + examples of z-test with the use of statistical tables	z-Test	Discussion and Questioning	Formative Assessment
13	4	Concept + definition + examples of t-test with the use of statistical tables	t-Distribution	Discussion and Questioning	Formative Assessment
14	4	Concept + definition + examples of χ^2 -test with the use of statistical tables, Concept + definition of f-test with the use of statistical tables	Chi-Square Distribution (χ^2) and F-Distribution	Discussion and Questioning	Formative Assessment
15	4	End of Semester Exam (Essay + Objective)	End of Semester Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	1. Principles of Probability Theory and Mathematical Statistics / Dr. Madani Desouki (1968). 2. Introduction to Statistics / Dr. Khash'a Mahmoud (2000, 1st Edition).
2. Main References (Sources)	1. Probabilities / Dr. Seymour Lipschutz (1974). 2. Experimental Statistics / Dr. Lutfi Hindi (1971).
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Sources related to the course content.
b. Electronic References, Internet Sites, etc.	---

Course Development Plan

Expand the course syllabus in line with the cognitive development of the subject matter.

Course Description Form

Field	Details
Course Name	Linear Algebra
Course Code	MAB03LA213
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	60 hours / Number of Units: 3
Date of Description Preparation	1/10/2025

Field	Details
Course Coordinator	Asst. Lect. Rusul Ismail Khalil
Email	basicmathte7@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn vector spaces and the meaning of fields, subspaces, linear independence, basis, dimension, and orthogonality.
- 2- Learn vector multiplication and dot product, the orthogonalization process (Gram-Schmidt).
- 3- Learn eigenvalues and eigenvectors.
- 4- Learn game theory, linear inequalities, and the simplex method.
- 5- Learn linear transformations.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of vector spaces and the meaning of fields, subspaces, linear independence, basis, dimension, and orthogonality.
A3	Enable students to acquire knowledge and understanding of vector multiplication and dot product, the orthogonalization process (Gram-Schmidt).
A4	Enable students to acquire knowledge and understanding of eigenvalues and eigenvectors.
A5	Enable students to acquire knowledge and understanding of game theory, linear inequalities, and the simplex method.
A6	Enable students to acquire knowledge and understanding of linear transformations.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in vector multiplication and dot product.

Code	Skill
B2	Skills in linear transformations.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in performing linear transformations.

Code	Skill
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Learn vector spaces and the meaning of fields	Vector Spaces and the Meaning of Fields, Subspaces, Linear Independence, Basis, Dimension, Orthogonality	Lecture	Formative Assessment
2	4	Learn subspaces and linear independence	Vector Spaces and the Meaning of Fields, Subspaces, Linear Independence, Basis, Dimension, Orthogonality	Lecture	Formative Assessment
3	4	Learn basis, dimension, and orthogonality	Vector Spaces and the Meaning of Fields, Subspaces, Linear Independence, Basis, Dimension, Orthogonality	Lecture	Formative Assessment
4	4	Learn vector multiplication	Vector Multiplication and Dot Product, Orthogonalization Process (Gram-Schmidt)	Explanation and Clarification	Formative Assessment
5	4	Learn dot product	Vector Multiplication and Dot Product, Orthogonalization Process (Gram-Schmidt)	Explanation and Clarification	Formative Assessment
6	4	First Month Exam – Various tests and			

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		problem-solving related to the topic			
7	4	Learn the orthogonalization process (Gram-Schmidt)	Vector Multiplication and Dot Product, Orthogonalization Process (Gram-Schmidt)	Lecture	Formative Assessment
8	4	Learn eigenvalues	Eigenvalues and Eigenvectors	Lecture	Formative Assessment
9	4	Learn eigenvectors	Eigenvalues and Eigenvectors	Lecture	Formative Assessment
10	4	Learn game theory	Game Theory, Linear Inequalities, Simplex Method	Lecture	Formative Assessment
11	4	Learn linear inequalities	Game Theory, Linear Inequalities, Simplex Method	Lecture	Formative Assessment
12	4	Learn the simplex method	Game Theory, Linear Inequalities, Simplex Method	Lecture	Formative Assessment
13	4	Learn linear transformations	Linear Transformations	Explanation and Clarification	Formative Assessment
14	4	Learn linear transformations	Linear Transformations	Explanation and Clarification	Formative Assessment
15	4	Second Month Exam – Objective tests and problem-solving			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Introduction to Linear Algebra. Authored by Bernard Kolman, translated by Dr. Adel Ghassan Naoum and Dr. Basil Atta Al-Hashimi.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	Seriyamath

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Curricula and Textbooks
Course Code	CURSE3
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Shahd Thamer Jasim
Email	basicmathte9@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- Understand the concept of curricula, their characteristics, and importance.
- Analyze the foundations of curricula (philosophical foundation, social foundation, psychological foundation).
- Explain the elements of the school curriculum: educational objectives and educational content.
- Distinguish between types of curricula, including (separate subjects curriculum, correlated subjects curriculum, activity curriculum, core curriculum).
- Understand curriculum evaluation and its objectives.
- Understand curriculum evaluation standards, methods of curriculum evaluation, and objectives of curriculum evaluation.
- Understand how to develop curricula.
- Understand the textbook and its importance.
- Compare between printed books and electronic books.
- Understand how to evaluate and develop the textbook.

Teaching and Learning Strategies

- Interactive lecture
- Group discussion
- Cooperative learning
- Model analysis (curriculum and textbook models)
- Brainstorming
- Problem-based learning
- Student presentations
- Case studies

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Understand the concept of curricula (old and modern)	Concept of Curricula	Lecture + Discussion	Oral Questions
2	3	Explain the characteristics of curricula and their importance	Characteristics of Curricula, Importance of Curricula	Interactive Lecture	Class Participation

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
3	3	Analyze the foundations of curricula	Philosophical (Intellectual), Social, Psychological (Developmental) Foundations	Group Discussion	Short Quiz
4	3	Analyze educational objectives and educational content	Elements of the School Curriculum	Presentation + Analysis	Analytical Assignment
5	3	First Month Exam			
6	3	Compare between types of curricula	Separate and Correlated Subjects Curriculum	Cooperative Learning	Student Presentation
7	3	Explain curriculum models, their advantages and disadvantages	Activity Curriculum and Core Curriculum	Discussion + Examples	Presentation Evaluation
8	3	Interpret the concept and objectives of evaluation	Concept and Objectives of Curriculum Evaluation	Lecture	Short Quiz
9	3	Apply evaluation standards	Standards, Methods, and Steps of Evaluation	Case Study	Applied Assignment
10	3	Explain curriculum development	Concept, Motivations, and Principles of Curriculum Development	Interactive Lecture	Short Quiz
11	3	Distinguish development models	Basic Models of Curriculum Development	Presentation + Discussion	Student Presentation

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
12	3	Define the textbook	Concept and Importance of the Textbook	Lecture	Oral Questions
13	3	Compare between types of books	Printed and Electronic Books	Discussion	Assignment
14	3	Explain the relationship between evaluation and the textbook and its development	Textbook Evaluation and Development	Textbook Model Analysis + Project-Based Learning	Report
15	3	Second Month Exam			

Assessment Methods

- 1- Monthly exams + daily tests + participation.
- 2- Class discussions.

Learning and Teaching Resources

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	- Ibrahim Firas (2005) Teaching Methods, Tools, and Techniques, Jordan, Amman, Dar Osama for Publishing and Distribution. - Abu Al-Futouh, Radwan, The Textbook, Cairo, Anglo-Egyptian Library. - Abu George, Marwan (2006) Contemporary Educational Curricula - Concepts, Elements, Foundations - Basic Operations, Curriculum Problems, Development and Modernization, 2nd Edition, Jordan, Amman, Dar Al-Thaqafa for Publishing and Distribution.

Category	Details
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Books on curricula and teaching methods. References on curriculum evaluation and development. Scientific research and articles in the field of curricula. Modern educational reports.
b. Electronic References, Internet Sites, etc.	(Google Scholar) Scientific databases. University and education college websites. E-learning platforms. Peer-reviewed educational journals.

Course Description Form

Field	Details
Course Name	Crimes of the Ba'ath Regime in Iraq
Course Code	MAB03D226
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. In'am Mohammed Mansour
Email	Basicchist31te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- Define the concept of crime.
- Explain the divisions of crime.
- Explain the importance of the role of law in combating crime.
- Explain the reasons for the Ba'ath regime's commission of crimes against the Iraqi people.
- Explain the material and moral suffering endured by the Iraqi people during the Ba'ath regime's rule.

- Compare between the rights enjoyed by the Iraqi people and other peoples of the region during that era.
- Explain the crimes of the Ba'ath regime according to the documentation of the Iraqi High Criminal Court of 2005.
- Explain the types of international crimes.
- Explain the rulings issued by the Iraqi High Criminal Court.
- Interpret the psychological and social crimes, their effects, and the most prominent violations of the Ba'athist regime in Iraq.
- Explain the Ba'ath regime's position on religion.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A2	Enable students to acquire knowledge and understanding of the term "crime" linguistically and terminologically.
A3	Enable students to acquire knowledge and understanding of the types of crimes.
A4	Enable students to acquire knowledge and understanding of the rulings issued by the Iraqi High Criminal Court in 2005.
A5	Enable students to acquire knowledge and understanding of the effects resulting from the psychological and social crimes committed by the Ba'ath regime in Iraq.
A6	Enable students to acquire knowledge and understanding of the types of international crimes.
A7	Enable students to acquire knowledge and understanding of the term "militarization of society."
A8	Enable students to acquire knowledge and understanding of the violations of Iraqi laws by the Ba'ath regime.

B. Skills Objectives of the Course

Code	Skill
B1	Compare between definitions of crimes in various human sciences (sociology, law, psychology, Islamic jurisprudence, Arabic language).
B2	Explain the divisions of crimes.
B3	Analyze the term "crime."

Code	Skill
B4	Collect information about the areas where crime spreads.
B5	Interpret the development of violations of Iraqi laws by the Ba'ath regime.
B6	Explain the extent of the Iraqi High Criminal Court's interest in punishing perpetrators of crimes in Iraq by the Ba'ath regime.
B7	Demonstrate the importance of awareness and knowledge of the rulings issued by the Iraqi High Criminal Court.

Teaching and Learning Methods

- 1- Provide students with the fundamentals and topics related to sustainable development.
- 2- Clarify and explain the course material.
- 3- Conduct daily tests for students to assess their understanding of the course material.
- 4- Improve students' skills by directing them to review international charters that emphasize the importance of punishing perpetrators of crimes of all types.
- 5- Use lecture, presentation, questioning, and discussion methods in some topics that require discussion.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of holding perpetrators of crimes accountable.
C2	Appreciate the importance of the subject matter.
C3	Connect the topics of the course to daily life.
C4	Evaluate the course material on the ground.

Teaching and Learning Methods (Affective)

- Explanation method for the material.
- Providing illustrative examples.
- Brainstorming method.

Assessment Methods (Affective)

- Analytical exam to measure the student's ability to think, analyze, and deduce.
- Request comparisons of the course topics to see if they are achieved in Iraq and compare them with developed countries.
- Daily exams with intellectual and deductive questions.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting additional information about the course material and analyzing it.
D3	Skills in utilizing available resources.
D4	Skills in making comparisons on the topic.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Understand the concept of crime and its definitions (in law, sociology, psychology, Arabic language, Islamic jurisprudence)	Concept of Crimes of the Ba'ath Regime in Iraq	Discussion and Questioning	Formative Assessment
2	2	Concept of crimes and their divisions	Divisions of Crimes	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
3	2	Rulings issued by the Iraqi High Criminal Court in 2005	Crimes of the Ba'ath Regime According to the Documentation of the Iraqi High Criminal Court	Discussion and Questioning	Formative Assessment
4	2	Psychological and social crimes in Iraq	Most Prominent Violations of the Ba'ath Regime in Iraq	Discussion and Questioning	Formative Assessment
5	2	Understanding the mechanisms of committing psychological crimes in Iraq	Psychological Crimes Committed by the Ba'ath Regime in Iraq	Discussion and Questioning	Formative Assessment
6	2	First Month Exam – Essay questions			
7	2	Understand the types of crimes committed in Iraq by the Ba'ath regime	Mechanisms of Committing Psychological and Social Crimes in Iraq	Discussion and Questioning	Formative Assessment
8	2	Understand the scorched earth policy adopted by the Ba'ath regime in Iraq	Environmental Crimes of the Ba'ath Regime in Iraq (War and Radiation Pollution – Destruction of Villages and Cities)	Discussion and Questioning	Formative Assessment
9	2	Understand how the marshes were drained	Policy of Burning Villages and Cities	Discussion and Questioning	Formative Assessment
10	2	Understand mass grave crimes	Events of Genocide Graves Committed by the Ba'ath Regime in Iraq	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
11	2	Understand the role of the Iraqi High Criminal Court in holding perpetrators of genocide crimes in Iraq accountable	Crimes of the Ba'ath Regime According to the Documentation of the Iraqi High Criminal Court	Discussion and Questioning	Formative Assessment
12	2	Understand the rulings issued by the Iraqi High Criminal Court	Violations of Iraqi Laws by the Ba'ath Regime	Discussion and Questioning	Formative Assessment
13	2	Explain the chronological classification of genocide graves in Iraq from 1963–2003	Mass Grave Crimes in Iraq	Discussion and Questioning	Formative Assessment
14	2	Human rights violations by the Ba'ath regime	Images of Human Rights Violations and Crimes of the Authority	Discussion and Questioning	Formative Assessment
15	2	Second Month Exam – Essay questions			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Curriculum on Crimes of the Ba'ath Regime in Iraq
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Reports issued by the Iraqi High Criminal Court and international declarations and charters concerning the punishment of perpetrators of crimes of all divisions and types.

Category	Details
b. Electronic References, Internet Sites, etc.	Quality lectures and hosting on electronic websites.

Course Development Plan

The course should cover the stages of defining crime linguistically and terminologically in law, sociology, psychology, and jurisprudence, divisions of crimes, types of international crimes, crimes of the Ba'ath regime according to the documentation of the Iraqi High Criminal Court in 2005, violations of Iraqi laws, and mass graves.

Course Description Form

Field	Details
Course Name	English Language
Course Code	ENGSE3
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Ahmed Riyad Adeeb
Email	basic_ahmadadyb@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

- Enable students to speak English fluently and communicate with each other, and also enable students to master the four skills (listening, speaking, reading, and writing).
- This curriculum will help students listen, speak, read, and write correctly using the English language.
- Enable students to watch movie videos or games to be able to discuss them after viewing.

Teaching and Learning Strategies

- Lecture and discussion.
- Brainstorming and asking questions that develop critical thinking.
- Interactive groups.
- Using the communicative approach.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	This curriculum will help students listen, speak, read, and write correctly using the English language. Enable students to watch movie videos or games to be able to discuss them after viewing.	Tenses (present, past), Questions (WH questions), Reading: The Great Communicators	Communicative	Oral and Written Tests
2	2		Unit 2: The Way We Live / Present Continuous / Have got / Has got		
3	2		Describing Countries /		

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
			Collocation / Reading: Living in USA		
4	2		Unit 3: All Went Wrong / Past Tenses / What did you do last night?		
5	2	First Month Exam			
6	2		Irregular verbs, Past continuous, Making negatives		
7	2		Time expressions (on, at, in), Unit 4: Let's Go Shopping (Quantity: many, much, some)		
8	2		Buying things (eggs, bread, a cola...), Articles (a, an, the)		
9	2		Reading: The Burglars' Friends,		

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
			Linking words (while, when, as, ...)		
10	2		What do you want to do? Verb patterns (want, hope to do)		
11	2		Future intention (going to)		
12	2		They are going to see a football match. I'll pick up for you. Reading: Hollywood Kids		
13	2		Good things and bad things in your country		
14	2		Exam Review		
15	2	Second Month Exam			

Assessment Methods

- 1- Monthly exams + daily tests + participation.
- 2- Class discussions.
- 3- Preparing reports.

Learning and Teaching Resources

Category	Details
1. Required Prescribed Books	1. New Headway Plus (Pre-Intermediate Student's Book, Cambridge: CUP) by John and Liz Soars. 2. Oxford University Press, 4th Edition, 2015. English Grammar In Use / Murphy / Oxford University Press / 2012.
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	
b. Electronic References, Internet Sites, etc.	

Course Description Form

Field	Details
Course Name	Arabic Language
Course Code	ARBF12
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Third / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Marwa Hashim Hassan
Email	basica49te@uodiyala.edu.iq

Course Objectives

The student should be able to:

1. Learn the parts of speech.
2. Learn the types of definite nouns.
3. Learn singular, dual, and plural.
4. Learn literature (explanation and analysis of the following poems and memorization, Qur'anic verses from Surat Al-Qamar, the Prophet's sermon to the Ansar after the Battle of Hunayn, the 'Ainiyyah of Abu Dhu'ayb Al-Hudhali, the Nuniyyah of Ibn Zaydun, and the poem of Ahmed Shawqi).

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the parts of speech.
A3	Enable students to acquire knowledge and understanding of the types of definite nouns.
A4	Enable students to acquire knowledge and understanding of singular, dual, and plural.
A5	Enable students to acquire knowledge and understanding of literature.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in explaining and analyzing the following poems and memorizing them.
B2	Skills related to lesson topics.

Teaching and Learning Methods

- Clarify and explain the course material.
- Model presentation method.
- Lecture method.
- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.

- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.
C2	Understand the importance of the influence of the doctrine of monotheism in life.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in making comparisons.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Learn the noun: definition and markers	Grammar	Lecture	Formative Assessment
2	2	Learn proper nouns, pronouns, demonstrative pronouns, relative pronouns, defined by (Al-), and defined by annexation	Grammar	Lecture	Formative Assessment
3	2	Learn the dual and its declension	Grammar	Lecture	Formative Assessment
4	2	Sound masculine plural, its conditions and declension; Sound feminine plural, its conditions and declension; Broken plural and some of its patterns, plurals of small number and large number	Grammar	Lecture	Formative Assessment
5	2	Learn the five nouns	Grammar	Lecture	Formative Assessment
6	2	First Month Exam – Various tests and exercises related to the topic			
7	2	Explanation and analysis of the following poem with memorization: The Mu'allaqah of Zuhair bin Abi Sulma, beginning with: "Is it from Umami Awfa, a ruin that did not speak, at Hawmanat Al-Daraj, so Al-Muthallam?"	Literature	Lecture	Formative Assessment
8	2	Qur'anic verses (from Surat Al-Qamar)	Literature	Lecture	Formative Assessment
9	2	The Prophet's sermon to the Ansar after the Battle of Hunayn	Literature	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
10	2	The 'Ainiyyah of Abu Dhu'ayb Al-Hudhali	Literature	Lecture	Formative Assessment
11	2	The Nuniyyah of Ibn Zaydun	Literature	Lecture	Formative Assessment
12	2	The poem of Ahmed Shawqi	Literature	Lecture	Formative Assessment
13	2	"Wulida Al-Huda Fa Al-Ka'inatu Diya'" (The light of guidance was born, so all existence became light)	Literature	Lecture	Formative Assessment
14	2	Literature review	Literature	Lecture	Formative Assessment
15	2	Second Month Exam – Objective tests			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	1. Explanation of Qatr Al-Nada wa Ball Al-Sada, by Ibn Hisham. 2. Al-Nahw Al-Wafi, by Abbas Hassan.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	1. Books of the early grammarians. 2. Jami' Al-Durus Al-Arabiyyah, by Mustafa Al-Ghalayini. 3. Journal of the Iraqi Scientific Academy.
b. Electronic References, Internet Sites, etc.	1. Lisan Al-Arab Blog. 2. Al-Maktaba Al-Shamila. 3. Al-Majlis Al-Ilmi website. 4. Al-Faseeh Network.

Course Description Form

Field	Details
Course Name	Geometry
Course Code	MAB03G222
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Yasmin Masoud
Email	basicmath10te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn the axiomatic system.
- 2- Learn Euclidean geometry, the parallel postulate, and some attempts to prove the parallel postulate.
- 3- Learn the emergence of non-Euclidean geometry (hyperbolic geometry, elliptic geometry).
- 4- Compare between geometries (Euclidean and non-Euclidean).

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the axiomatic system.

Code	Objective
A3	Enable students to acquire knowledge and understanding of Euclidean geometry.
A4	Enable students to acquire knowledge and understanding of the emergence of non-Euclidean geometry.
A5	Enable students to acquire knowledge and understanding of comparisons between geometries.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in the axiomatic system.
B2	Skills in Euclidean geometry.
B3	Skills in the emergence of non-Euclidean geometry.
B4	Skills in comparing between geometries.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Code	Objective
C2	Understand the importance of mathematical induction.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in making comparisons.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Learn Young's and Fano's	Axiomatic System	Lecture	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		systems			Assessment
2	3	Learn properties of the axiomatic system	Axiomatic System	Lecture	Formative Assessment
3	3	Euclidean geometry	Euclidean Geometry, Parallel Postulate	Lecture	Formative Assessment
4	3	The parallel postulate	Euclidean Geometry, Parallel Postulate	Lecture	Formative Assessment
5	3	Ptolemy's attempt	Some Attempts to Prove the Parallel Postulate	Lecture	Formative Assessment
6	3	First Month Exam – Various tests and problem-solving related to the topic			
7	3	Omar Al-Khayyam's proof	Some Attempts to Prove the Parallel Postulate	Lecture	Formative Assessment
8	3	Nasir Al-Din Al-Tusi's proof	Some Attempts to Prove the Parallel Postulate	Lecture	Formative Assessment
9	3	Proclus's attempt	Some Attempts to Prove the Parallel Postulate	Lecture	Formative Assessment
10	3	Athir Al-Din Al-Abhari's proof, Wallis's proof	Some Attempts to Prove the Parallel Postulate	Lecture	Formative Assessment
11	3	Hilbert's system – definition and	Hilbert's System	Lecture	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		components			Assessment
12	3	Hyperbolic geometry	Emergence of Non-Euclidean Geometry	Lecture	Formative Assessment
13	3	Elliptic geometry	Emergence of Non-Euclidean Geometry	Lecture	Formative Assessment
14	3	Euclidean and non-Euclidean	Comparison between Geometries	Lecture	Formative Assessment
15	3	Second Month Exam – Objective tests and problem-solving			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Mathematical Thinking
Course Code	MAB03MT313
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Israa Amer Fleih
Email	basicmathte7te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

1. Define thinking, the meaning of thinking in the Qur'anic verses, the philosophical approach, and the psychological approach.
2. Enumerate the levels of thinking: learning how to learn, metacognitive controls, content-related thinking, reflective thinking.
3. Compare between types of thinking: critical, inductive, reflective, mathematical, cognitive, logical, deductive, scientific.
4. Define mathematical thinking.
5. Mention the most important objectives of mathematical thinking in basic education.
6. Enumerate the fields of mathematical thinking.
7. Define methods of developing mathematical thinking.
8. Develop thinking in students.
9. Develop mathematical thinking.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Define thinking as mentioned in the Qur'anic verses.
A2	Provide examples of levels of thinking.
A3	Enumerate types of thinking.
A4	Mention the objectives of mathematical thinking.
A5	Compare between mathematical thinking development programs.

B. Skills Objectives of the Course

Code	Skill
B1	Explain the objectives of thinking.
B2	Distinguish between levels of thinking.
B3	Compare between methods of developing mathematical thinking.
B4	Analyze using mathematical thinking.
B5	Apply by writing a paper or research on any topic in mathematical thinking.
B6	Collect information about mathematical thinking programs.

Teaching and Learning Methods

- 1- Provide students with the fundamentals and topics related to mathematical thinking.
- 2- Clarify and explain the course material.
- 3- Require students to visit the library and review sources.
- 4- Improve students' skills through visiting electronic sites to gain additional knowledge of mathematical thinking.
- 5- Use lecture, presentation, questioning, and discussion methods in some topics that require discussion.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on topics related to mathematical thinking.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of studying the philosophical approach to mathematical thinking.
C2	Apply some methods of mathematical thinking.
C3	Evaluate some activities related to mathematical thinking.
C4	Compare between mathematical thinking development programs.

Teaching and Learning Methods (Affective)

- 1- Use of presentation methods.
- 2- Drawing illustrative diagrams.
- 3- Brainstorming method.

Assessment Methods (Affective)

- Analytical exam to measure the student's ability to think, analyze, and deduce.
- Request comparisons between mental thinking programs.
- Writing research that includes skills for developing mathematical thinking.
- Daily exams with intellectual and deductive questions.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in utilizing available resources.
D4	Skills in making comparisons on the topic.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Understand the meaning of thinking (definition – philosophical approach – psychological approach)	Mathematical Thinking in the Qur'anic Verses – Philosophical Approach	Discussion and Questioning	Formative Assessment
2	2	Understand the levels of thinking	How to Learn	Discussion and Questioning	Formative Assessment
3	2	Understand critical, reflective, and inductive thinking	Types of Thinking	Discussion and Questioning	Formative Assessment
4	2	Understand cognitive, deductive, and scientific thinking	Types of Thinking	Discussion and Questioning	Formative Assessment
5	2	First Month Exam – Essay test			
6	2	Define the meaning of mathematical thinking	Mathematical Thinking (Meaning – Definition)	Discussion and Questioning	Formative Assessment
7	2	Enumerate the objectives of mathematical thinking	Objectives of Mathematical Thinking in Basic Education	Discussion and Questioning	Formative Assessment
8	2	Compare between fields of mathematical thinking (induction, deduction, expression, generalization, abstraction)	Fields of Mathematical Thinking	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
9	2	Compare between fields of mathematical thinking (formal logic, investigation, proof, problem-solving)	Fields of Mathematical Thinking	Discussion and Questioning	Formative Assessment
10	2	Second Monthly Exam			
11	2	Understand methods of developing mathematical thinking	Methods of Developing Mathematical Thinking	Discussion and Questioning	Formative Assessment
12	2	Understand stages of developing thinking in children	Stages of Developing Thinking in Children	Discussion and Questioning	Formative Assessment
13	2	Understand stages of developing thinking in children	Stages of Developing Thinking in Children	Discussion and Questioning	Formative Assessment
14	2	Understand mathematical thinking development programs	Mathematical Thinking Development Programs	Discussion and Questioning	Formative Assessment
15	2	Understand mathematical thinking development programs	Mathematical Thinking Development Programs	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	
b. Electronic References, Internet Sites, etc.	Lectures by experts in the field of mathematics teaching methods.

Course Description Form

Field	Details
Course Name	Computer (MATLAB)
Course Code	MAB03MO227
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Haneen Abbas Saleh
Email	basicmathte6@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn an introduction to the MATLAB technical computing language.
- 2- Learn constants and variables.
- 3- Learn matrices and operations on matrices.
- 4- Learn symbolic strings.
- 5- Learn MATLAB data files.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the MATLAB technical computing language.
A3	Enable students to acquire knowledge and understanding of constants and variables.
A4	Enable students to acquire knowledge and understanding of matrices and operations on matrices.
A5	Enable students to acquire knowledge and understanding of symbolic strings.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in operations on matrices.
B2	Skills in input and output statements.
B3	Skills in set and bit instructions and basic instructions.
B4	Skills in graphing.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.

- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and applied problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Learn an introduction to the MATLAB technical computing language	Introduction to the MATLAB Technical Computing Language	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
2	3	Learn constants and variables	Constants and Variables	Explanation and Clarification	Formative Assessment
3	3	Learn matrices and operations on matrices	Matrices and Operations on Matrices	Explanation and Clarification	Formative Assessment
4	3	Learn multidimensional matrices	Multidimensional Matrices	Explanation and Clarification	Formative Assessment
5	3	Learn cell arrays	Cell Arrays	Explanation and Clarification	Formative Assessment
6	3	Learn symbolic strings	Symbolic Strings	Explanation and Clarification	Formative Assessment
7	3	First Periodic Exam – Solving the exam and discussing errors with students			
8	3	Learn input and output statements	Input and Output Statements	Explanation and Clarification	Formative Assessment
9	3	Learn conditional statements	Conditional Statements	Explanation and Clarification	Formative Assessment
10	3	Learn loop and iteration statements	Loop and Iteration Statements	Explanation and Clarification	Formative Assessment
11	3	Learn MATLAB data files	MATLAB Data Files	Explanation and	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
				Clarification	
12	3	Learn set and bit instructions and basic instructions	Set and Bit Instructions and Basic Instructions	Explanation and Clarification	Formative Assessment
13	3	Learn functions and subroutines	Functions and Subroutines	Explanation and Clarification	Formative Assessment
14	3	Learn graphing	Graphing	Explanation and Clarification	Formative Assessment
15	3	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Computer (Internet, PowerPoint, Word)
Course Code	COMSE4
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Jaber Mohammed Jaber
Email	basicmat12te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

- 1- Students should understand what networks are and be able to effectively perform search operations within the network.
- 2- Learn methods of downloading resources, programs, and images.
- 3- Learn methods of creating ready-made presentations.
- 4- Learn methods of saving and printing.
- 5- Learn methods of creating email and security and protection methods.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Enable students to acquire knowledge and understanding of the basics of the Internet.
A2	Enable students to acquire basics in PowerPoint.
A3	Increase students' awareness of the importance of using mathematics and its programs in general.

Code	Objective
A4	Enable students to create their own email.
A5	Enable students to use PowerPoint slides.

B. Skills Objectives of the Course

Code	Skill
B1	Increase students' ability to use the Internet quickly.
B2	Increase students' ability to adapt to all programs and applications available on the network.
B3	Increase students' ability to learn special skills in network applications such as email.
B4	Increase students' ability to learn special skills in networks such as downloading resources and books.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

Code	Objective
C1	Students understand the basic components of the Internet.
C2	Students understand how to deal with networks and their various applications.
C3	Students understand how to deal with the PowerPoint presentation program.
C4	Understand the World Wide Web and how to search, download resources, and methods of downloading.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching knowledge to basic education students.
D2	Select examples from basic education curricula, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Introduction to the	Introduction to the	Discussion	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		Internet and web browsing	Internet and Web Browsing	and Questioning	Assessment
2	2	Downloading resources, programs, and images	Downloading Resources, Programs, and Images	Discussion and Questioning	Formative Assessment
3	2	Creating an email inbox and correspondence	Creating an Email Inbox and Correspondence	Discussion and Questioning	Formative Assessment
4	2	Security and protection	Security and Protection	Discussion and Questioning	Formative Assessment
5	2	Changing Internet settings	Changing Internet Settings	Discussion and Questioning	Formative Assessment
6	2	Monthly Exam	Monthly Exam		Formative Assessment
7	2	Starting PowerPoint and creating a new presentation	Starting PowerPoint and Creating a New Presentation	Discussion and Questioning	Formative Assessment
8	2	Creating presentations using design templates	Creating Presentations Using Design Templates	Discussion and Questioning	Formative Assessment
9	2	Opening a new presentation – Opening an existing presentation	Opening a New Presentation – Opening an Existing Presentation	Discussion and Questioning	Formative Assessment
10	2	Editing and arranging presentations	Editing and Arranging Presentations	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
11	2	Saving and printing	Saving and Printing	Discussion and Questioning	Formative Assessment
12	2	Changing the entire presentation design	Changing the Entire Presentation Design	Discussion and Questioning	Formative Assessment
13	2	Editing and moving text, adding artwork	Editing and Moving Text, Adding Artwork	Discussion and Questioning	Formative Assessment
14	2	Using speaker notes and exiting the program	Using Speaker Notes and Exiting the Program	Discussion and Questioning	Formative Assessment
15	2	Monthly Exam	Monthly Exam		Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Basics of the Internet, Basics of PowerPoint
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
2. The course is developed according to requirements that emerge from curriculum development in the global system.
3. Reliance on curricula issued by the sectoral authority and what is proposed by colleges and universities.

Course Description Form

Field	Details
Course Name	Psychology of Education and Classroom Thinking
Course Code	MA03SE228
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	60 hours (Theoretical: 30, Practical: 30) / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Mohammed Waheeb Mahdi
Email	Mohammed.wheab@uodiyala.edu.iq

Course Objectives

- 1- Self-regulation of students in learning and teaching classroom thinking skills.
- 2- Enhance students' creative thinking skills.
- 3- Enhance students' critical thinking skills.
- 4- Confront difficult tasks and process information more deeply when they adopt mastery goals rather than performance goals.

Teaching and Learning Strategies

- Cooperative learning.
- Brainstorming.
- Free and guided discussions.
- Task analysis.
- Problem-solving.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Concept of Learning and Teaching	Active Learning	Short Tests
2	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Classroom Management	Cooperative Learning	Objective and Essay Written Tests
3	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Concept of the Classroom as a Cognitive and Perceptual Field	Brainstorming	Writing Short Reports
4	4	Know, understand, apply, analyze, synthesize,	Karl's Model of Learning for Mastery, Ausubel's Model of	Free and Guided Discussions	Portfolios

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		evaluate, creative and critical thinking skills	Meaningful Learning		
5	4	First Month Exam			
6	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Piaget's Model (Cognitive Learning)	Task Analysis	Short Tests
7	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Importance of the Electronic Classroom	Problem-Solving	Objective and Essay Written Tests
8	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical	Enrichment Links of the Learning and Teaching Process	Traditional Learning	Short Tests

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		thinking skills			
9	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Teaching Thinking	Free and Guided Discussions	Portfolios
10	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Importance of Teaching Thinking	Cooperative Learning	Objective and Essay Written Tests
11	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	Patterns of Thinking	Brainstorming	Writing Short Reports
12	4	Know, understand, apply,	FourMAT Models	Active Learning	Short Tests

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		analyze, synthesize, evaluate, creative and critical thinking skills			
13	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	SCAMPER Model	Free and Guided Discussions	Portfolios
14	4	Know, understand, apply, analyze, synthesize, evaluate, creative and critical thinking skills	KOLb Model	Cooperative Learning	Writing Short Reports
15	4	Second Month Exam			

Assessment Methods

- 1- Monthly exams + daily tests + participation.
- 2- Class discussions.

Learning and Teaching Resources

Category	Details
1. Required Prescribed Books	Psychology of Education and Classroom Thinking
2. Main References (Sources)	1. Al-Hassan, Ahmed (2020). Cognitive Learning Theories and Their Applications in Modern Education, Amman: Dar Wael for Publishing. 2. Abdullah, Sarah (2021). Models of Teaching Thinking: Piaget, Kolb, SCAMBER, and FourMAT, Riyadh: Dar Al-Thaqafa Al-Haditha. 3. Al-Ghamri, Mohammed (2018). Teaching Thinking and Developing Higher-Order Thinking Skills for Students, Cairo: Dar Al-Fikr Al-Arabi.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Psychology of Learning and Teaching 2001, Salmi Mohammed Melhem.
b. Electronic References, Internet Sites, etc.	1. Learning Theories – Ed Tech Books (Online textbook). 2. The Experiential Learning Theory of David Kolb – Verywell.

Course Description Form

Field	Details
Course Name	Graph Theory
Course Code	MAB03DT322
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Prof. Dr. Hussein Abdul Hussein
Email	basicmatte@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of graph, degree of a graph, definition of vertices and edges.
2. Concept of directed and undirected graphs and subgraphs.
3. Knowledge of the incidence matrix of vertices and the incidence matrix of graphs.
4. The Handshaking Theorem.
5. Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.
6. Graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the concept of graph, degree of a graph, definition of vertices and edges.
A2	The student should know the concept of directed and undirected graphs and subgraphs.
A3	The student should know the incidence matrix of vertices and the incidence matrix of graphs.
A4	The student should know the Handshaking Theorem.
A5	Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.
A6	The student should know the concept of graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Graph and its types.
B2	Incidence matrix of vertices and incidence matrix of graphs.
B3	Handshaking Theorem.

Code	Skill
B4	Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.
B5	Graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define graphs and their types.
C2	Define the incidence matrix of vertices and the incidence matrix of graphs.
C3	The Handshaking Theorem.
C4	Graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to mathematical thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Concept of graph, degree, vertices, and edges	Concept of Graph, Degree, Vertices, and Edges	Discussion and Questioning	Formative Assessment
2	3	Examples of graphs	Examples of Graphs	Discussion and Questioning	Formative Assessment
3	3	Directed and undirected graphs with examples	Directed and Undirected Graphs with Examples	Discussion and Questioning	Formative Assessment
4	3	Subgraphs with examples	Subgraphs with Examples	Discussion and Questioning	Formative Assessment
5	3	Handshaking Theorem	Handshaking Theorem	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
6	3	Monthly Exam	Monthly Exam	-	Formative Assessment
7	3	Incidence matrix of vertices with examples	Incidence Matrix of Vertices with Examples	Discussion and Questioning	Formative Assessment
8	3	Incidence matrix of graphs with examples	Incidence Matrix of Graphs with Examples	Discussion and Questioning	Formative Assessment
9	3	Paths, circuits, connectivity, and disconnection	Paths, Circuits, Connectivity, and Disconnection	Discussion and Questioning	Formative Assessment
10	3	Trees and their characteristics with examples	Trees and Their Characteristics with Examples	Discussion and Questioning	Formative Assessment
11	3	Monthly Exam	Monthly Exam	-	Formative Assessment
12	3	Hamiltonian graphs	Hamiltonian Graphs	Discussion and Questioning	Formative Assessment
13	3	Graph coloring, Kuratowski's theorem	Graph Coloring, Kuratowski's Theorem	Discussion and Questioning	Formative Assessment
14	3	The Four Color Theorem with applications	The Four Color Theorem with Applications	Discussion and Questioning	Formative Assessment
15	3	Final Exam	Final Exam	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Introduction to Graph Theory. Dr. Ali Aziz Ali.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
2. The course is developed according to requirements that emerge from curriculum development in the global system.

Course Description Form

Field	Details
Course Name	Educational Psychology
Course Code	EDPSE4
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Yusra Khalaf Mohammed
Email	basicsci42@uodiyala.edu.iq

Course Objectives

- Understand the phenomena of learning and teaching and the factors affecting them, and interpret the outcomes of events that occur within the relationship between learning and teaching and between teacher and learner.
- Increase the teacher's ability to see from a distance the educational changes occurring in students and to plan to meet their expectations of changes in educational events.
- Organize and formulate knowledge, use it, and apply it in educational situations.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

The student should be able to:

Code	Objective
A1	Define the concept of educational psychology.
A2	Explain the importance of educational psychology.
A3	Identify the objectives of educational psychology.
A4	Distinguish between the theoretical and practical objectives of educational psychology.
A5	Explain the characteristics of the teaching profession.
A6	Explain the relationship between educational psychology and other sciences.
A7	Identify the desirable characteristics of the teacher's personality.
A8	Enumerate the functions of educational psychology.
A9	Justify the importance of the axes of educational process effectiveness.
A10	Identify the factors affecting educational process effectiveness.
A11	Define motivation.
A12	Explain the relationship between motivation and learning.
A13	Identify the educational functions of motivation.
A14	Define the concept of memory.

Code	Objective
A15	Explain the mechanism of memory function.
A16	Define the sequential processing strategy.
A17	Define the parallel processing strategy.
A18	Explain the importance of studying memory.
A19	Compare between sequential and parallel processing strategies.
A20	Enumerate types of memory.
A21	Explain the relationship between memory and learning.
A22	Explain the most important contemporary theories that explained memory.
A23	Define cognitive theory.
A24	Explain the mechanism of memory function according to cognitive theory.
A25	Define behavioral theory.
A26	Explain the mechanism of memory function according to behavioral theory.
A27	Define Gestalt theory.
A28	Explain the mechanism of memory function according to Gestalt theory.
A29	Discuss the mechanism of memory function.
A30	Explain the most important factors affecting the recall process.
A31	Identify the most important ways to improve the recall process.
A32	Define the concept of forgetting.
A33	Define interference theory.
A34	Explain the mechanism of forgetting through interference theory.

Code	Objective
A35	Identify the most important factors affecting forgetting.
A36	Define transfer of training effect.
A37	Explain the importance of studying transfer of training effect.
A38	Explain the dimensions of transfer of training effect.
A39	Enumerate the types of transfer of training effect.
A40	Compare between positive and negative transfer of training effect.
A41	Identify modern theories of transfer of training effect.
A42	Compare between theories of transfer of training effect.
A43	Define feedback.
A44	Explain the dimensions of feedback.
A45	Identify the types of feedback.
A46	Define learning.
A47	Explain the conditions of good learning.
A48	Explain the effect of learning on language acquisition.
A49	Explain the effect of learning on the acquisition of motor skills.
A50	Explain the most important learning theories and their laws.
A51	Explain the relationship between discovery and learning.

B. Skills Objectives of the Course

Code	Skill
B1	Determine the mechanism of transferring theoretical knowledge to the applied (practical) side

Code	Skill
	within the classroom.
B2	Apply strategies for stimulating motivation within the classroom.
B3	Apply appropriate methods to reduce the effect of forgetting.
B4	Design educational situations that facilitate transfer of training effect (learning).
B5	Apply learning theories in educational situations.
B6	Propose appropriate solutions to educational problems based on the principles of educational psychology.

Teaching and Learning Methods

- Modified lecture – Discussion – Questioning – Brainstorming – Stimulating questions.

Assessment Methods

- Continuous assessment of student work (reports), assigned homework, participation, and interaction with peers and the instructor, pop quizzes (weekly).
- Formative assessment through written exams (two exams during the semester).
- Summative assessment through the final exam.

C. Affective and Value Objectives

Code	Objective
C1	Understand the impact of knowledge and scholars on the development of educational psychology.
C2	Demonstrate active interest in studying educational psychology.
C3	Develop positive attitudes toward the learning process.
C4	Modify negative attitudes toward the learning process.

Teaching and Learning Methods (Affective)

- Brainstorming – Discussion – Branching questions.

Assessment Methods (Affective)

- Reports, summaries, and worksheets.
- Observation and follow-up.
- Group discussion during the lecture.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Ability to solve various problems using scientific methods and apply what has been studied to real-world problems.
D2	Apply the principles of educational psychology in studying real-world problems.
D3	Develop cooperative learning skills.
D4	Graphing skills for different learning curves.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Define the concept of educational psychology, explain its importance, identify its objectives, distinguish between theoretical and practical objectives, determine the mechanism of transferring theoretical knowledge to practice within the classroom	1. Definition of Educational Psychology 2. Importance of Educational Psychology 3. Objectives of Educational Psychology 4. Relationship of Educational Psychology to Other Sciences	Modified Lecture – Discussion	Continuous Assessment (Participation – Reports – Homework – Interaction)
2	3	Identify desirable	1. Desirable Teacher	Discussion –	Continuous Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		teacher personality characteristics, enumerate the functions of educational psychology	Personality Characteristics (Psychological – Physical – Mental – Social) 2. Functions of Educational Psychology	Brainstorming	(Daily Quiz – Participation – Reports – Homework – Interaction)
3	3	Justify the importance of educational process effectiveness axes, identify factors affecting educational process effectiveness	1. Interpretation of the Educational Process 2. Educational Process and Educational Psychology (Axes of Effectiveness) 3. Factors Affecting Educational Process Effectiveness	Discussion – Modified Lecture	Continuous Assessment (Participation – Reports – Homework – Interaction)
4	3	Define motivation, explain the relationship between motivation and learning, identify educational functions of motivation	1. Definition of Motivation 2. Educational Functions of Motivation (Excitatory – Anticipatory – Inducing – Disciplinary)	Discussion – Modified Lecture	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
5	3	Apply strategies for stimulating motivation within the classroom	1. Strategies for Stimulating Student Motivation Toward Learning	Discussion – Brainstorming	Continuous Assessment (Participation – Reports – Homework – Interaction)
6	3	Define the concept of memory, explain its mechanism, explain the importance of studying memory, compare between sequential and parallel processing strategies	1. Definition of Memory 2. Importance of Studying Memory	Discussion – Brainstorming	Continuous Assessment (Participation – Reports – Homework – Interaction)
7	3	First Month Exam			Formative Assessment (Written Exam)
8	3	Enumerate types of memory, explain the relationship between memory and learning, explain contemporary theories of	1. Contemporary Perspectives in Explaining Memory and Its Models (Cognitive – Behavioral – Gestalt)	Brainstorming – Stimulating Questions	Continuous Assessment (Participation – Reports – Homework – Interaction)

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		memory, explain cognitive, behavioral, and Gestalt perspectives			
9	3	Discuss the mechanism of memory, explain factors affecting recall, identify ways to improve recall	1. Mechanisms of Memory Function 2. Factors Affecting Recall 3. Ways to Improve Recall	Brainstorming – Stimulating Questions	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)
10	3	Define forgetting, explain its mechanism through interference theory, identify factors affecting forgetting	1. Causes of Forgetting 2. Theories of Forgetting (Proactive and Retroactive Interference)	Brainstorming – Stimulating Questions	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)
11	3	Define transfer of training effect, explain its importance	1. Importance of Studying Transfer of Training Effect 2. Definition of Transfer of Training Effect	Brainstorming – Stimulating Questions	Continuous Assessment (Participation – Reports – Homework – Interaction)
12	3	Explain dimensions of	1. Dimensions of Transfer of	Problem-Solving –	Continuous Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		transfer of training effect, compare between theories, design educational situations that facilitate transfer	Training Effect 2. Theories of Transfer of Training Effect	Discussion	(Participation – Reports – Homework – Interaction)
13	3	Define feedback, explain its dimensions, identify its types	1. Definition of Feedback 2. Dimensions of Feedback 3. Types of Feedback	Problem-Solving – Discussion	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)
14	3	Define learning, explain conditions of good learning, explain the effect of learning on language and motor skills acquisition	1. Definition of Learning 2. Conditions of Good Learning 3. Learning and Acquisition (Language – Motor Skills)	Brainstorming – Branching Questions	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)
15	3	Explain learning theories and their laws, explain the relationship between discovery and learning,	1. Learning Theories and Their Laws 2. Discovery and Learning 3. Learning Curves	Problem-Solving – Discussion	Continuous Assessment (Pop Quiz – Participation – Reports – Homework – Interaction)

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		graphing skills for learning curves			
16	3	Second Month Exam			Formative Assessment (Written Exam)

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Fadel Mohsen Al-Azirjawi, Foundations of Educational Psychology. Emad Abdul Rahim Al-Zughoul, Principles of Educational Psychology. Fouad Abu Hatab, Dictionary of Psychology and Education. Saleh Mohammed Ali Abu Jado, Educational Psychology, 2nd Edition. Mahmoud Abdul Halim Mansi, Introduction to Educational Psychology. Izzat Jaradat, Introduction to Education.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Recommended research, theses, and dissertations related to the course topics.
b. Electronic References, Internet Sites, etc.	University of Babylon website through e-learning lecture service: http://repository.uobabylon.edu.iq/elearning/elearning2012.aspx . College of Basic Education, University of Diyala: http://www.basicedu.uodiyala.edu.iq/ . Iraqi Academic Journals website: http://www.iasj.net/iasj .

Course Development Plan

1- Enrich the course with applied aspects related to the teaching profession.

Course Description Form

Field	Details
Course Name	Advanced Integral Calculus
Course Code	MAB03AI221
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fourth / Second Year
Total Study Hours	60 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Fatima Yasin Taha
Email	basicmathte8@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn some theorems used for double integrals with the concept of functions of two variables $f(x,y)$.
- 2- Learn finding volumes using single integrals by Shell, Washer, and Disk methods.
- 3- Learn finding arc length and plane areas.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of some theorems for double integrals.

Code	Objective
A3	Enable students to acquire knowledge and understanding of finding volumes using single integrals.
A4	Enable students to acquire knowledge and understanding of finding arc length and plane areas.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in finding volumes using double integrals with the concept of functions of two variables $f(x,y)$.
B2	Skills in finding volumes using single integrals by Shell, Washer, and Disk methods.
B3	Skills in finding arc length and plane areas.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and multiple problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in making comparisons.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Graphing curves from definite integrals / areas / addition	Review of Integration Methods	Explanation and Clarification	Formative Assessment
2	4	Integration of inverse trigonometric functions	Review of Integration Methods	Explanation and Clarification	Formative Assessment
3	4	Theorems in double integrals	Some Theorems Used for Double Integrals with the Concept of Functions	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
			of Two Variables $f(x,y)$		
4	4	Theorems used for double integrals with the concept of functions of two variables $f(x,y)$	Some Theorems Used for Double Integrals with the Concept of Functions of Two Variables $f(x,y)$	Explanation and Clarification	Formative Assessment
5	4	Theorems used for double integrals with the concept of functions of two variables $f(x,y)$	Some Theorems Used for Double Integrals with the Concept of Functions of Two Variables $f(x,y)$	Explanation and Clarification	Formative Assessment
6	4	First Month Exam – Various tests and problem-solving related to the topic			
7	4	Finding volumes using single	Finding Volumes Using	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		integrals by Washer method	Single Integrals		
8	4	Finding volumes using single integrals by Shell method	Finding Volumes Using Single Integrals	Explanation and Clarification	Formative Assessment
9	4	Finding volumes using single integrals by Disk method	Finding Volumes Using Single Integrals	Explanation and Clarification	Formative Assessment
10	4	Finding arc length and plane areas	Finding Arc Length and Plane Areas	Explanation and Clarification	Formative Assessment
11	4	Finding arc length and plane areas	Finding Arc Length and Plane Areas	Explanation and Clarification	Formative Assessment
12	4	Finding arc length and plane areas	Finding Arc Length and Plane Areas	Explanation and Clarification	Formative Assessment
13	4	Finding arc length and plane areas	Finding Arc Length and Plane Areas	Explanation and Clarification	Formative Assessment
14	4	Finding arc length and plane areas	Finding Arc Length and Plane	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
			Areas		
15	4	Second Month Exam – Objective tests and problem-solving			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Calculus. Thomas Jr. ...
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	www.inmath.com

Third Year – Fifth Semester Program Description

Year \ Level	Course Code	Course Name	Credit Hours		Total Hours	Number of Units
			Theoretical	Practical		
Third \ Fifth	MAB03NA311	Numerical Analysis	3	1	4	3.5
	MAB03AS223	Advanced Statistics	3	1	4	3.5
	Math 3320	Differential Equations	3	1	4	3.5
	Math 3321	Group Theory	2	1	3	2.5
	Math 3318	Mathematical Thinking	2	-	2	2
	ED-RE-TH-1	Educational Research Methodology	3	-	3	3
	Coll 3212	General Teaching Methods	3	-	3	3
	Math 3322	Computer (Specialized)	1	2	3	2
	Total		20	6	26	23

Third Year – Sixth Semester Program Description

Year \ Level	Course Code	Course Name	Credit Hours
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Year \ Level	Course Code	Course Name	Credit Hours		Total Hours	Number of Units
			Theoretical	Practical		
Third \ Sixth	Math 3325	Mathematical Analysis	2	2	4	3
	Math 3326	Graph Theory	3	-	3	3
	MAB03SD329	Sustainable Development	2	-	2	2
	Coll 3211	Measurement and Evaluation	2	-	2	2
	Math 3323	Ring Theory	2	1	3	2.5
	Math 3324	Specialized Teaching Methods	3	-	3	3
	Coll 4214	Curricula and Textbooks	2	-	2	2
Total			16	3	19	17.5

Course Description Form

Field	Details
Course Name	Advanced Statistics
Course Code	MAB03AS223
Available Attendance Modes	Mandatory (In-Person)

Field	Details
Semester / Year	Fifth / Third Year
Total Study Hours	60 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Israa Amer Fleih
Email	basicmathte7te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn probability distributions.
- 2- Learn sampling theory, sample designs, and sampling distributions.
- 3- Learn hypothesis testing, steps of hypothesis testing, tests related to means and proportions.
- 4- Learn the Z-test, T-distribution, Chi-square distribution, and F-distribution.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

	Objective
	Knowledge and understanding.
	Enable students to acquire knowledge and understanding of probability distributions.
	Enable students to acquire knowledge and understanding of sampling theory, sample designs, and sampling distributions.
	Enable students to acquire knowledge and understanding of hypothesis testing, steps of hypothesis testing, tests related to means and proportions.
	Enable students to acquire knowledge and understanding of the Z-test, T-distribution, Chi-square

	Objective
	distribution, and F-distribution.

Code	Skill
B1	Skills in probability distributions.
B2	Skills in sampling theory.
B3	Skills in hypothesis testing.
B4	Skills in the Z-test and T-distribution.

B. Skills Objectives of the Course

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and problem-solving related to the topic.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in interpreting theorems.
D4	Skills in making comparisons.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Random variables, discrete and continuous probability distributions, binomial distribution	Probability Distribution	Lecture	Formative Assessment
2	4	Poisson distribution, normal curve, area under the normal curve, normal distribution	Probability Distribution	Lecture	Formative Assessment
3	4	Relationship between normal distribution and binomial distribution	Probability Distribution	Explanation and Clarification	Formative Assessment
4	4	Mean of a single sample drawn from a normal population	Sampling Theory, Sample Designs, Sampling Distribution	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
5	4	Difference between two arithmetic means	Sampling Theory, Sample Designs, Sampling Distribution	Explanation and Clarification	Formative Assessment
6	4	First Month Exam – Various tests and problem-solving related to the topic			
7	4	Proportion test for a single sample	Sampling Theory, Sample Designs, Sampling Distribution	Explanation and Clarification	Formative Assessment
8	4	Test of the difference between two proportions from two samples drawn from the population	Sampling Theory, Sample Designs, Sampling Distribution	Explanation and Clarification	Formative Assessment
9	4	Steps of hypothesis testing	Hypothesis Testing	Explanation and Clarification	Formative Assessment
10	4	Tests related to means	Hypothesis Testing	Explanation and Clarification	Formative Assessment
11	4	Tests related to proportions	Hypothesis Testing	Explanation and Clarification	Formative Assessment
12	4	Z-test and T-distribution	Z-test, T-distribution, Chi-square distribution, F-distribution	Explanation and Clarification	Formative Assessment
13	4	Chi-square distribution and F-distribution	Z-test, T-distribution, Chi-square distribution, F-distribution	Explanation and Clarification	Formative Assessment
14	4	In terms of distribution shape, derivation, and	Z-test, T-distribution, Chi-	Explanation and	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		finding tabulated values	square distribution, F-distribution	Clarification	Assessment
15	4	Second Month Exam – Objective tests and problem-solving			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Introduction to Statistics. Dr. Khash'a Mahmoud Al-Rawi, 2000, 2nd Edition.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	Seriyamath

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Educational Research Methodology
Course Code	ED-RE-TH-1
Available Attendance Modes	Mandatory (In-Person)

Field	Details
Semester / Year	Fifth / Third Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Mohammed Waheeb Mahdi
Email	mohammed.whaed@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- | |
|--|
| 1. Learn science and scientific research. |
| 2. Learn the research problem and its hypotheses. |
| 3. Learn the study participants. |
| 4. Learn data collection tools. |
| 5. Learn how to prepare a research report. |
| 6. Learn libraries and scientific research. |
| 7. Learn how to summarize a master's or doctoral thesis by students. |

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Level	Objective
	Knowledge and understanding.
	Enable students to acquire knowledge and understanding of the stages of reaching knowledge.
	Enable students to acquire knowledge and understanding of the nature of science, objectives of science, and characteristics of research.
	Enable students to acquire knowledge and understanding of reviewing literature related to the research problem.

le	Objective
	Enable students to acquire knowledge and understanding of libraries and scientific research.

B. Skills Objectives of the Course	Code	Skill
	B1	Skills in educational research and its steps.
	B2	Skills related to sources of obtaining the problem.
	B3	Skills related to data collection tools.
	B4	Skills in preparing a research report.
	B5	Skills in summarizing a master's or doctoral thesis by students.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.
C2	Understand the importance of ethical considerations in educational research.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

Code	Skill
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D1	Skills in using references and terminology.	1- Theoretical tests. 2- Reports and studies. D. General and Transferable Qualification Skills (Other Skills Related to
D2	Skills in collecting and analyzing data on the topic.	
D3	Skills in interpreting theorems.	
D4	Skills in making comparisons.	
D5	Skills in preparing specific concepts on the topic.	

Employability and Personal Development)

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Learn the stages of reaching knowledge, Learn the nature of science, objectives of science, and characteristics of research, Learn educational research and its steps, Learn ethical considerations in educational research	Science and Scientific Research	Explanation and Clarification	Formative Assessment
2	3	Learn the classification of research: • Descriptive research • Experimental research • Historical research	Science and Scientific Research	Explanation and Clarification	Formative Assessment
3	3	Learn sources of obtaining the problem, Rules for formulating the problem	Research Problem and Its Hypotheses	Explanation and Clarification	Formative Assessment
4	3	Learn research variables, Research hypotheses, Reviewing literature related to the research problem	Research Problem and Its Hypotheses	Explanation and Clarification	Formative Assessment
5	3	Learn conducting surveys and interviews	Study Participants	Model Presentation	Formative Assessment
6	3	Learn observation	Study Participants	Lecture	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
7	3	First Month Exam – Objective and essay tests			
8	3	Learn preparing a research report	Preparing a Research Report	Lecture	Formative Assessment
9	3	Learn preparing a research report	Preparing a Research Report	Lecture	Formative Assessment
10	3	Learn libraries and scientific research	Libraries and Scientific Research	Lecture	Formative Assessment
11	3	Learn libraries and scientific research	Libraries and Scientific Research	Lecture	Formative Assessment
12	3	Summarizing a master's or doctoral thesis by students	Summarizing a Master's or Doctoral Thesis by Students	Lecture	Formative Assessment
13	3	Summarizing a master's or doctoral thesis by students	Summarizing a Master's or Doctoral Thesis by Students	Lecture	Formative Assessment
14	3	Summarizing a master's or doctoral thesis by students	Summarizing a Master's or Doctoral Thesis by Students	Model Presentation	Formative Assessment
15	3	Second Month Exam – Objective and essay tests			

Infrastructure

Category	Details
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Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	1. Al-Azzawi, Rahim Younis Karo, 2008, Introduction to Scientific Research Methodology, 1st Edition, Dar Dijla for Printing and Publishing, Amman, Jordan.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	1. Daoud, Aziz Hanna and Abdul Rahman, Anwar Hussein, 1990, Educational Research Methodologies, Ministry of Higher Education and Scientific Research, Dar Al-Hikma for Printing and Publishing, University of Baghdad, Iraq.
b. Electronic References, Internet Sites, etc.	Any site related to educational research.

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Numerical Analysis
Course Code	MAB03NA311
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	60 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Nada Mohsen Khalil
Email	basicmathte5@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn solutions of nonlinear equations.
- 2- Learn solutions of linear equations.
- 3- Learn numerical integration and differentiation.
- 4- Learn solving ordinary differential equations.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of solutions of nonlinear equations.
A3	Enable students to acquire knowledge and understanding of solutions of linear equations.
A4	Enable students to acquire knowledge and understanding of numerical integration and differentiation.
A5	Enable students to acquire knowledge and understanding of solving ordinary differential equations.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in locating roots.
B2	Skills in Gaussian elimination method.
B3	Skills in Newton's formulas for numerical differentiation.
B4	Skills in the Runge-Kutta method.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and applied problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Solutions of linear equations	Solutions of Nonlinear Equations	Explanation and Clarification	Formative Assessment
2	4	Newton's method	Solutions of Nonlinear Equations	Explanation and Clarification	Formative Assessment
3	4	Convergence of iterative methods (finding roots of polynomials)	Solutions of Nonlinear Equations	Explanation and Clarification	Formative Assessment
4	4	Gaussian elimination method	Solutions of Linear Equations	Explanation and Clarification	Formative Assessment
5	4	Gauss-Jordan method	Solutions of Linear Equations	Explanation and Clarification	Formative Assessment
6	4	Gauss-Jordan method	Solutions of Linear Equations	Explanation and Clarification	Formative Assessment
7	4	First Periodic Exam – Solving the exam and discussing errors with students			
8	4	Numerical differentiation	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment
9	4	Newton's formulas for numerical differentiation	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment
10	4	Simpson's rule	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
11	4	Numerical integration and differentiation	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment
12	4	Numerical integration and differentiation	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment
13	4	Numerical integration and differentiation	Numerical Integration and Differentiation	Explanation and Clarification	Formative Assessment
14	4	Second Periodic Exam – Solving the exam and discussing errors with students			
15	4	General Review			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Numerical Methods. Dr. Ali Saifi, 1990.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Introduction to Numerical Analysis. Dr. Ahmed Saleh Al-Alusi. Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Mathematical Thinking
Course Code	Math 3318
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Shahd Thamer Jasim
Email	basicmathte9@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

1. Define thinking, the meaning of thinking in the Qur'anic verses, the philosophical approach, and the psychological approach.
2. Enumerate the levels of thinking: learning how to learn, metacognitive controls, content-related thinking, reflective thinking.
3. Compare between types of thinking: critical, inductive, reflective, mathematical, cognitive, logical, deductive, scientific.
4. Define mathematical thinking.
5. Mention the most important objectives of mathematical thinking in basic education.
6. Enumerate the fields of mathematical thinking.
7. Define methods of developing mathematical thinking.
8. Develop thinking in students.
9. Develop mathematical thinking.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Define thinking as mentioned in the Qur'anic verses.
A2	Provide examples of levels of thinking.
A3	Enumerate types of thinking.
A4	Mention the objectives of mathematical thinking.
A5	Compare between mathematical thinking development programs.

B. Skills Objectives of the Course

Code	Skill
B1	Explain the objectives of thinking.
B2	Distinguish between levels of thinking.
B3	Compare between methods of developing mathematical thinking.
B4	Analyze using mathematical thinking.
B5	Apply by writing a paper or research on any topic in mathematical thinking.
B6	Collect information about mathematical thinking programs.

Teaching and Learning Methods

- 1- Provide students with the fundamentals and topics related to mathematical thinking.
- 2- Clarify and explain the course material.
- 3- Require students to visit the library and review sources.
- 4- Improve students' skills through visiting electronic sites to gain additional knowledge of mathematical thinking.
- 5- Use lecture, presentation, questioning, and discussion methods in some topics that require discussion

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.

- 3- Assign students to complete research and reports on topics related to mathematical thinking.
4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of studying the philosophical approach to mathematical thinking.
C2	Apply some methods of mathematical thinking.
C3	Evaluate some activities related to mathematical thinking.
C4	Compare between mathematical thinking development programs.

Teaching and Learning Methods (Affective)

- 1- Use of presentation methods.
2- Drawing illustrative diagrams.
3- Brainstorming method.

Assessment Methods (Affective)

- Analytical exam to measure the student's ability to think, analyze, and deduce.
- Request comparisons between mental thinking programs.
- Writing research that includes skills for developing mathematical thinking.
- Daily exams with intellectual and deductive questions.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in utilizing available resources.
D4	Skills in making comparisons on the topic.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Understand the meaning of thinking (definition – philosophical approach – psychological approach)	Mathematical Thinking in the Qur'anic Verses – Philosophical Approach	Discussion and Questioning	Formative Assessment
2	2	Understand the levels of thinking	How to Learn	Discussion and Questioning	Formative Assessment
3	2	Understand critical, reflective, and inductive thinking	Types of Thinking	Discussion and Questioning	Formative Assessment
4	2	Understand cognitive, deductive, and scientific thinking	Types of Thinking	Discussion and Questioning	Formative Assessment
5	2	First Month Exam – Essay test			
6	2	Define the meaning of mathematical thinking	Mathematical Thinking (Meaning – Definition)	Discussion and Questioning	Formative Assessment
7	2	Enumerate the objectives of mathematical thinking	Objectives of Mathematical Thinking in Basic Education	Discussion and Questioning	Formative Assessment
8	2	Compare between fields of mathematical thinking (induction, deduction, expression, generalization, abstraction)	Fields of Mathematical Thinking	Discussion and Questioning	Formative Assessment
9	2	Compare between fields of mathematical thinking (formal logic, investigation, proof, problem-solving)	Fields of Mathematical Thinking	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
10	2	Second Monthly Exam			
11	2	Understand methods of developing mathematical thinking	Methods of Developing Mathematical Thinking	Discussion and Questioning	Formative Assessment
12	2	Understand stages of developing thinking in children	Stages of Developing Thinking in Children	Discussion and Questioning	Formative Assessment
13	2	Understand stages of developing thinking in children	Stages of Developing Thinking in Children	Discussion and Questioning	Formative Assessment
14	2	Understand mathematical thinking development programs	Mathematical Thinking Development Programs	Discussion and Questioning	Formative Assessment
15	2	Understand mathematical thinking development programs	Mathematical Thinking Development Programs	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	
b. Electronic References, Internet Sites, etc.	Lectures by experts in the field of mathematics teaching methods.

Course Development Plan

The course should include: Arab contributions to the development of mathematics, manifestations of mathematical thinking and its developments.

Course Description Form

Field	Details
Course Name	Differential Equations
Course Code	Math 3320
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	60 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Shaker Mahmoud Salman
Email	basicmath6te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of first-order differential equations (separation of variables, homogeneous and non-homogeneous, etc.).
2. Concept of general and particular solutions of differential equations.
3. Knowledge of linear equations of higher order reduced to first order.
4. Using the method of variation of parameters to find the particular solution of a non-homogeneous differential equation.
5. Euler's equation and its solution.
6. Reduction of order of a differential equation.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the concept of differential equations, degree and order of the equation.
A2	The student should know the concept of general and particular solutions of differential equations.
A3	The student should know methods of solving differential equations.
A4	The student should know the method of variation of parameters to find the particular solution of a non-homogeneous differential equation.
A5	The student should know Euler's equation and its solution.
A6	The student should know reduction of order of a differential equation.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Concept of differential equations, degree and order of the equation.
B2	Concept of general and particular solutions of differential equations.
B3	Methods of solving differential equations.
B4	Euler's equation and its solution.
B5	Reduction of order of a differential equation.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define differential equations.
C2	Define general and particular solutions of differential equations.
C3	Define Euler's equation and its solution.
C4	Define reduction of order of a differential equation.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to mathematical thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Concept of differential equations with examples	Concept of Differential Equations with Examples	Discussion and Questioning	Formative Assessment
2	4	Order and degree of the equation with examples	Order and Degree of the Equation with Examples	Discussion and Questioning	Formative Assessment
3	4	Separation of variables method with examples	Separation of Variables Method with Examples	Discussion and Questioning	Formative Assessment
4	4	Homogeneous with examples	Homogeneous with Examples	Discussion and Questioning	Formative Assessment
5	4	Non-homogeneous with examples	Non-homogeneous with Examples	Discussion and Questioning	Formative Assessment
6	4	Monthly Exam	Monthly Exam	-	Formative Assessment
7	4	General and particular solutions with examples	General and Particular Solutions with Examples	Discussion and Questioning	Formative Assessment
8	4	Linear equations with	Linear Equations with	Discussion and	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		examples	Examples	Questioning	Assessment
9	4	General solution of homogeneous equations with examples	General Solution of Homogeneous Equations with Examples	Discussion and Questioning	Formative Assessment
10	4	Particular solution of homogeneous equations with examples	Particular Solution of Homogeneous Equations with Examples	Discussion and Questioning	Formative Assessment
11	4	Monthly Exam	Monthly Exam	-	Formative Assessment
12	4	Method of variation of parameters	Method of Variation of Parameters	Discussion and Questioning	Formative Assessment
13	4	Euler's equation with examples	Euler's Equation with Examples	Discussion and Questioning	Formative Assessment
14	4	Reduction of order with examples	Reduction of Order with Examples	Discussion and Questioning	Formative Assessment
15	4	Final Exam	Final Exam	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Methods of Solving Ordinary Differential Equations. Dr. Khalid Ahmed Al-Samarrai. Introduction to Differential Equations.
a. Recommended Books and	Utilizing periodicals and sources related to the course.

Category	Details
References (Scientific Journals, Reports, etc.)	
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

- | |
|---|
| 1. The course is developed according to requirements that emerge from curriculum development in basic education stages. |
| 2. The course is developed according to requirements that emerge from curriculum development in the global system. |

Course Description Form

Field	Details
Course Name	Group Theory
Course Code	Math 3321
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Prof. Dr. Hamid Kadhim Dawood
Email	basicmath5te@uodiyala.edu.iq

Course Objectives

- 1- Learn the meaning of mathematical systems.
- 2- Learn groups.
- 3- Learn abelian groups.
- 4- Learn non-abelian groups.
- 5- Learn subgroups, cyclic groups, finite groups, and quotient groups.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the meaning of mathematical systems.
A2	The student should know groups with examples.
A3	The student should know abelian and non-abelian groups.
A4	Subgroups, cyclic groups, finite groups, and quotient groups.

B. Skills Objectives of the Course

Code	Skill
B1	Meaning of mathematical systems.
B2	Meaning of mathematical systems.
B3	Groups with examples.
B4	Abelian and non-abelian groups.
B5	Subgroups, cyclic groups, finite groups, and quotient groups.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses, professor's expertise). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed. The methods used in presenting the course syllabus are as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Using effective discussion methods, constructive questioning, and feedback.
4. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the tenth week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ group theory skills in teaching statistical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire group skills.
D4	Construct tests specific to groups for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
2	3	Groups with examples	Mathematical Systems	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
3	3	Abelian groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
4	3	Non-abelian groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
5	3	Abelian and non-abelian groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
6	3	Subgroups	Mathematical Systems	Explanation and Clarification	Formative Assessment
7	3	Exam with various objective questions			
8	3	Cyclic groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
9	3	Finite groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
10	3	Infinite groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
11	3	Finite and infinite groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
12	3	Quotient groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
13	3	Quotient groups	Mathematical Systems	Explanation and Clarification	Formative Assessment
14	3	Exam with objective questions and problem-solving			
15	3	Review			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	1. Artin, "Algebra" 2008, Pearson Education, Inc. (India).
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Introduction to Group Theory. Authored by Dr. Adel Ghassan Naoum and others. Abstract Algebra. Dr. Adel Ghassan Naoum, Dr. Basil Atta Al-Hashimi. Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Computer (Specialized)
Course Code	Math 3322
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Haneen Abbas Saleh
Email	basicmathte6@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn an introduction to the MATLAB technical computing language.
- 2- Learn constants and variables.
- 3- Learn matrices and operations on matrices.
- 4- Learn symbolic strings.
- 5- Learn MATLAB data files.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the MATLAB technical computing language.
A3	Enable students to acquire knowledge and understanding of constants and variables.
A4	Enable students to acquire knowledge and understanding of matrices and operations on matrices.
A5	Enable students to acquire knowledge and understanding of symbolic strings.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in operations on matrices.
B2	Skills in input and output statements.
B3	Skills in set and bit instructions and basic instructions.
B4	Skills in graphing.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and applied problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.

Code	Skill
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Learn an introduction to the MATLAB technical computing language	Introduction to the MATLAB Technical Computing Language	Explanation and Clarification	Formative Assessment
2	3	Learn constants and variables	Constants and Variables	Explanation and Clarification	Formative Assessment
3	3	Learn matrices and operations on matrices	Matrices and Operations on Matrices	Explanation and Clarification	Formative Assessment
4	3	Learn multidimensional matrices	Multidimensional Matrices	Explanation and Clarification	Formative Assessment
5	3	Learn cell arrays	Cell Arrays	Explanation and Clarification	Formative Assessment
6	3	Learn symbolic strings	Symbolic Strings	Explanation and Clarification	Formative Assessment
7	3	First Periodic Exam – Solving the exam and discussing errors with students			
8	3	Learn input and output statements	Input and Output Statements	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
9	3	Learn conditional statements	Conditional Statements	Explanation and Clarification	Formative Assessment
10	3	Learn loop and iteration statements	Loop and Iteration Statements	Explanation and Clarification	Formative Assessment
11	3	Learn MATLAB data files	MATLAB Data Files	Explanation and Clarification	Formative Assessment
12	3	Learn set and bit instructions and basic instructions	Set and Bit Instructions and Basic Instructions	Explanation and Clarification	Formative Assessment
13	3	Learn functions and subroutines	Functions and Subroutines	Explanation and Clarification	Formative Assessment
14	3	Learn graphing	Graphing	Explanation and Clarification	Formative Assessment
15	3	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals,	Utilizing any sources related to

Category	Details
Reports, etc.)	the topic.
b. Electronic References, Internet Sites, etc.	

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Measurement and Evaluation
Course Code	Coll 3211
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Shahd Thamer Jasim
Email	basicmathte9@uodiyala.edu.iq

Course Objectives

This course aims to help students achieve the following:

- 1- Understand the scientific meaning of measurement and evaluation concepts and the difference between them.
- 2- Understand the importance of evaluation and its main areas, steps, and types.
- 3- Acquire the skill of preparing various types of tests.
- 4- Acquire applied skills in the basics of statistics in educational measurement and evaluation.
- 5- Understand evaluation tools and their use appropriate to different aspects of the learner.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Enable students to acquire knowledge and understanding of the concept of measurement and evaluation.
A2	Enable students to acquire knowledge and understanding of the concept of personality tests.
A3	Enable students to acquire knowledge and understanding of the concept of oral and written tests.
A4	Enable students to acquire knowledge and understanding of the concept of objective and essay tests.
A5	Enable students to acquire knowledge and understanding of how to prepare tests.
A6	Enable students to acquire knowledge and understanding of how to prepare a test blueprint.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in distinguishing between measurement and evaluation concepts.
B2	Skills in preparing a table of specifications or test blueprint.
B3	Skills in choosing the appropriate test to measure the achievement of set objectives.
B4	Skills in preparing a set of behavioral objectives.

Teaching and Learning Methods

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|--|
| <ul style="list-style-type: none">• Questioning and discussion. |
| <ul style="list-style-type: none">• Requiring students to prepare models of objective and essay tests. |

Assessment Methods

- | |
|---|
| 1- Daily, monthly, and semester exams.
2- Delivering a micro-lesson in front of students.
3- Practical tests in creating models of objective and essay tests. |
|---|

C. Affective and Value Objectives

Code	Objective
C1	Develop students' attitudes toward using innovations and developments in teaching methods.
C2	Keep up with developments in educational and psychological sciences.
C3	Develop students' attitudes toward the teaching profession.

Teaching and Learning Methods (Affective)

• Brainstorming.
• Problem-solving method.
• Programmed instruction.

Assessment Methods (Affective)

• Daily and monthly tests.
• Practical tests (application).

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using modern sources.
D2	Skills in benefiting from the latest developments in the educational field.
D3	Skills in delivering a practical lesson in front of students.

Code	Skill
D4	Skills in preparing tests according to scientific foundations.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Ability to define and understand evaluation and measurement and the relationship between them	Evaluation: Concept, Types, Areas – Measurement: Concept, Characteristics, and Relationship with Evaluation	Lecture and Questioning	Daily Quiz
2	2	Enable students to know and understand the steps of constructing achievement tests prepared by the teacher, including determining the importance of behavioral objectives	Types of Tests and Educational and Psychological Measures – Steps of Constructing Achievement Tests Prepared by the Teacher, Including Determining the Importance of Behavioral Objectives	Cooperative Learning	Daily Class Participation
3	2	Enable students to know and	Foundations for Determining	Lecture, Questioning, Discussion	Class Participation in Lecture

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		understand the foundations for determining test items / distribution of test items in light of the weights of objectives and content	Test Items / Distribution of Test Items in Light of the Weights of Objectives and Content – Behavioral Objectives: Definition, Characteristics, Levels		Preparation
4	2	Enable students to know and understand types of test items, their characteristics, and foundations of formulation	Types of Test Items: Characteristics and Foundations of Formulation	Group Discussion	Class Participation in Lecture Preparation
5	2	Enable students to know and understand the formulation of test items and their types, foundations of item arrangement, principles of test administration	Formulation of Test Items and Their Types – Foundations of Item Arrangement – Principles of Test Administration	Lecture	Class Participation in Lecture Preparation
6	2	Monthly Exam			
7	2	Enable students to	Validity: Definition,	Lecture and Discussion	Class Participation

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		know and understand validity: definition, types, methods of extracting validity – Reliability: definition, characteristics	Types, Methods of Extracting Validity – Reliability: Definition, Characteristics		in Lecture Preparation
8	2	Enable students to know and understand oral tests	Oral Tests	Lecture and Questioning	Class Participation in Lecture Preparation
9	2	Enable students to know and understand intelligence tests: definition and types	Intelligence Tests: Definition and Types	Lecture and Questioning	Class Participation in Lecture Preparation
10	2	Enable students to know and understand personality and interest scales	Personality and Interest Scales	Lecture, Questioning, and Discussion	Class Participation in Lecture Preparation
11	2	Enable students to know and understand non-test measurement tools	Non-Test Measurement Tools	Lecture and Questioning	Class Participation in Lecture Preparation

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
12	2	Monthly Exam			

Infrastructure

Category	Details
1. Required Prescribed Books	-
2. Main References (Sources)	School Achievement Tests (Foundations of Construction and Analysis of Their Questions) by Prof. Dr. Abdul Wahid Hamid Al-Kubaisi and Prof. Dr. Hadi Mish'an Rabi'.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Educational and Psychological Evaluation and Measurement, Ramziya Al-Gharib. Principles of Educational Measurement and Evaluation for the University Student and the Arab Teacher, Sab'a Abu Labda.
b. Electronic References, Internet Sites, etc.	Various educational websites.

Course Development Plan

Course Description Form

Field	Details
Course Name	General Teaching Methods
Course Code	Coll 3212
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Fifth / Third Year
Total Study Hours	45 hours / Number of Units: 2

Field	Details
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Jaber Mohammed Jaber
Email	basicmath12te@uodiyala.edu.iq

Course Objectives

1. Students' knowledge of the concept of teaching methods.
2. Students' knowledge of the importance of teaching methods.
3. Understanding the most commonly used methods.
4. Understanding the most important trends and innovations in teaching methods.
5. Understanding teaching methods for mastery and creativity.
6. Students' knowledge of diversifying teaching and its strategies.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Enable students to acquire knowledge and understanding of the concept of teaching methods.
A2	Enable students to acquire knowledge and understanding of the concept of teaching strategies.
A3	Enable students to acquire knowledge and understanding of the concept of teaching techniques.
A4	Enable students to acquire knowledge and understanding of commonly used teaching methods.
A5	Enable students to acquire knowledge and understanding of the concept of diversifying teaching.
A6	Enable students to acquire knowledge and understanding of trends and innovations in teaching methods.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in distinguishing between methods.
B2	Skills in analyzing and interpreting each method in terms of advantages and disadvantages.
B3	Skills in choosing the best teaching method.
B4	Skills in integrating more than one method in a single lesson.

Teaching and Learning Methods

1. Lecture delivery.
2. Questioning and discussion.
3. Requiring students to write a daily lesson plan.
4. Requiring students to prepare and deliver a micro-lesson.

Assessment Methods

1. Daily, monthly, and semester exams with objective and essay questions.
2. Practical tests in writing a daily lesson plan.
3. Delivering a micro-lesson in front of peers.

C. Affective and Value Objectives

Code	Objective
C1	Develop a spirit of innovation and renewal.
C2	Keep up with the latest innovations and developments in teaching methods.
C3	Keep pace with the use of technology in education.
C4	Communicate with developments in global educational and psychological sciences.

Teaching and Learning Methods (Affective)

• Brainstorming.
• Problem-solving method.
• Programmed instruction.

Assessment Methods (Affective)

• Written exams.
• Practical tests (application).

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Use modern and advanced sources.
D2	Benefit from technology in learning and teaching.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Enable students to know and understand the nature of teaching methods, their curricula, and the need for them	Teaching Methods: Nature, Curricula, and Need for Them	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
2	2	Enable students to know and understand the basic elements in teaching	Basic Elements in Teaching Curricula	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
3	2	Enable students to know and understand the appropriate teaching method and factors	Appropriate Teaching Method and Factors Affecting Its Selection, Evaluation, and	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		affecting its selection, evaluation, and follow-up	Follow-up		
4	2	Enable students to know and understand the concept of lecture method, its forms, advantages, and disadvantages	Lecture Method – Forms, Advantages, Disadvantages, and Reasons for Preference	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
5	2	Enable students to know and understand the concept of group discussion	Group Discussion: Advantages and Disadvantages	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
6	2	Enable students to know and understand the concept of induction and deduction method	Induction and Deduction Method: Steps, Advantages, and Disadvantages	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
7	2	Enable students to know and understand the concept of live questioning	Live Questioning Method and Types of Classroom Questions	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Daily Exams
8	2	Enable students to know and understand the concept of team teaching and programmed instruction	Team Teaching and Programmed Instruction	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
9	2	Enable students to know and understand micro-teaching and correspondence teaching	Micro-Teaching and Correspondence Teaching	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Applied
10	2	Enable students to know and understand planning for teaching	Planning for Teaching	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Applied

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
11	2	Enable students to know and understand the concept of diversifying teaching and its psychological and educational foundations	Concept of Diversifying Teaching and Its Psychological and Educational Foundations	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation
12	2	Enable students to know and understand important skills for applying the strategy of diversifying teaching	Important Skills for Applying the Strategy of Diversifying Teaching	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Daily Exams
13	2	Enable students to know and understand important skills for applying the strategy of diversifying teaching	Learning for Mastery Method	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Daily Exams
14	2	Enable students to know and understand the role-playing method	Role-Playing Method	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Applied
15	2	Enable students to know and understand the brainstorming method	Brainstorming Method	Lecture, Questioning, Discussion	Class Participation in Lecture Preparation – Applied

Infrastructure

Category	Details
1. Required Prescribed Books	Latest publications in teaching methods and strategies covering the prescribed syllabus.

Category	Details
2. Main References (Sources)	Dr. Dawood Maher Mohammed and Majid Mahdi Mohammed: Fundamentals of General Teaching Methods. Shaker Al-Amin: General Teaching Methods for Social Subjects. Al-Hila: Teaching Methods and Strategies.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	
b. Electronic References, Internet Sites, etc.	

Course Development Plan

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|---|
| <ul style="list-style-type: none"> • Provide the college with the latest sources in scientific research and teaching methods. |
| <ul style="list-style-type: none"> • Provide a school for training the student-teacher under the supervision of the supervising professor. |

Course Description Form

Field	Details
Course Name	Ring Theory
Course Code	Math 3323
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year
Total Study Hours	45 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Nada Mohsen Khalil
Email	basicmathte5@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn the concept of rings.
- 2- Learn subrings.
- 3- Learn ideals and quotient rings.
- 4- Learn maximal ideals.
- 5- Learn prime ideals.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of the concept of rings.
A3	Enable students to acquire knowledge and understanding of subrings.
A4	Enable students to acquire knowledge and understanding of ideals and quotient rings.
A5	Enable students to acquire knowledge and understanding of maximal ideals.
A6	Enable students to acquire knowledge and understanding of prime ideals.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in solving problems related to the topic.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and applied problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
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Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Learn the concept of rings	Concept of Rings	Model Presentation	Formative Assessment
2	3	Learn the concept of rings	Concept of Rings	Explanation and Clarification	Formative Assessment
3	3	Learn subrings	Subrings	Explanation and Clarification	Formative Assessment
4	3	Learn subrings	Subrings	Explanation and Clarification	Formative Assessment
5	3	Learn subrings	Subrings	Explanation and Clarification	Formative Assessment
6	3	Learn ideals and quotient rings	Ideals and Quotient Rings	Explanation and Clarification	Formative Assessment
7	3	First Periodic Exam – Solving the exam and discussing errors with students			
8	3	Learn ideals and quotient rings	Ideals and Quotient Rings	Explanation and Clarification	Formative Assessment
9	3	Learn ideals and quotient rings	Ideals and Quotient Rings	Explanation and Clarification	Formative Assessment
10	3	Learn maximal ideals	Maximal Ideals	Explanation and Clarification	Formative Assessment
11	3	Learn maximal ideals	Maximal Ideals	Explanation and Clarification	Formative Assessment
12	3	Learn prime ideals	Prime Ideals	Explanation and Clarification	Formative Assessment
13	3	Learn prime ideals	Prime Ideals	Explanation and Clarification	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
14	3	Learn prime ideals	Prime Ideals	Explanation and Clarification	Formative Assessment
15	3	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	1. Dr. Mohammed Jawad, Ring Theory, University of Baghdad, College of Science.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Abstract Algebra. Dr. Adel Ghassan Naoum, Dr. Basil Atta Al-Hashimi. Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Specialized Teaching Methods
Course Code	Math 3324
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year

Field	Details
Total Study Hours	45 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinators	Asst. Prof. Dr. Iman Kadhim + Asst. Lect. Sara Natiq
Email	basicmath2te@uodiyala.edu.iq / basicmath8te@uodiyala.edu.iq

Course Objectives

• Areas of objectives for teaching mathematics at the elementary level and how to formulate them.
• Classification of specific objectives, how to formulate them, and modern trends in that regard.
• Preparing lesson plans on mathematical topics from school mathematics for the elementary level.
• Teaching concepts (arithmetic and geometric) and Van Hiele levels in geometric thinking.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Classification of specific objectives, how to formulate them, and modern trends.
A2	Examples from school mathematics on how to present them according to both methods.
A3	Concept of achievement in mathematics and reasons for low student achievement in mathematics.
A4	Dienes' model in games (definition + examples), Piaget's model and mathematics teaching (definition + examples).

B. Skills Objectives of the Course

Code	Skill
B1	Planning skills.

Code	Skill
B2	Implementation skills.
B3	Evaluation skills.

Teaching and Learning Methods

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|---|
| <ul style="list-style-type: none"> Lecture method (presentation). |
| <ul style="list-style-type: none"> Dialogue and discussion method. |

Assessment Methods

- Achievement exams (daily, monthly, semester).
-

C. Affective and Value Objectives

Code	Objective
C1	Remedial methods for some problems in teaching mathematics at the elementary level and their treatment.
C2	Some different teaching methods and modern trends.

Teaching and Learning Methods (Affective)

- | |
|---|
| <ul style="list-style-type: none"> Lecture method (presentation). |
| <ul style="list-style-type: none"> Dialogue and discussion method. |

Assessment Methods (Affective)

- | |
|---|
| <ul style="list-style-type: none"> Achievement exams (daily, monthly, semester). |
|---|
-

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Learner's ability to deal positively with the course material.
D2	Raise the scientific and practical level of the learner.
D3	Give the learner an opportunity to demonstrate their talent.
D4	Learner's ability to perform computational skills in dealing with the course material.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Areas of objectives for teaching mathematics at the elementary level and how to formulate them	Objectives of Teaching Mathematics	Discussion and Questioning	Formative Assessment
2	3	Classification of specific objectives, how to formulate them, and modern trends	Classification of Educational Objectives	Discussion and Questioning	Formative Assessment
3	3	The spiral and centered approaches: concept, definition, and characteristics of each	Methods of Presenting Mathematical Topics	Discussion and Questioning	Formative Assessment
4	3	Examples from school mathematics on how to present them according to both methods	Methods of Presenting Mathematical Topics	Discussion and Questioning	Formative Assessment
5	3	Presenting mathematical topics at the elementary level according to modern trends based on modern learning theories	Modern Trends in Presenting Mathematical Topics	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
6	3	Monthly Exams (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
7	3	Concept of achievement in mathematics and reasons for low student achievement in mathematics	Mathematical Achievement	Discussion and Questioning	Formative Assessment
8	3	Remedial methods for some problems in teaching mathematics at the elementary level	Mathematical Achievement	Discussion and Questioning	Formative Assessment
9	3	Concept of planning, types of educational planning	Planning for Teaching Mathematics	Discussion and Questioning	Formative Assessment
10	3	Preparing lesson plans on mathematical topics from school mathematics for the elementary level	Planning for Teaching Mathematics	Discussion and Questioning	Formative Assessment
11	3	Monthly Exam (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
12	3	Some different teaching methods and modern trends	Specialized Teaching Methods in Mathematics	Discussion and Questioning	Formative Assessment
13	3	Teaching concepts (arithmetic and geometric) and Van Hiele levels in geometric thinking	Mathematical Concepts	Discussion and Questioning	Formative Assessment
14	3	Dienes' model in games (definition + examples), Piaget's model and mathematics teaching (definition + examples)	Educational Models	Discussion and Questioning	Formative Assessment
15	3	End of Semester Exam (Essay	End of Semester Exam (Essay +	Discussion and	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		+ Objective)	Objective)	Questioning	Assessment

Category	Details
1. Required Prescribed Books	1. Teaching Methods of Mathematics / Farid Abu Zina.
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Sources related to the course content.
b. Electronic References, Internet Sites, etc.	

Infrastructure

Course Development Plan

Expand the course syllabus in line with the cognitive development of the subject matter.

Course Description Form

Field	Details
Course Name	Mathematical Analysis
Course Code	Math 3325
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year

Field	Details
Total Study Hours	45 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Anfal Hassan Dhiab
Email	basicmath9te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- | |
|---|
| 1- Learn real numbers.
2- Learn the completeness and Archimedean properties.
3- Learn sequences of functions and series of functions.
4- Learn integration theorems. |
|---|

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of real numbers.
A3	Enable students to acquire knowledge and understanding of completeness and Archimedean properties.
A4	Enable students to acquire knowledge and understanding of sequences of functions and series of functions.
A5	Enable students to acquire knowledge and understanding of integration theorems.

B. Skills Objectives of the Course

Code	Skill
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B1	Skills in solving problems related to the topic.
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Teaching and Learning Methods

- | |
|--|
| 1- Clarify and explain the course material.
2- Model presentation method.
3- Lecture method.
4- Self-learning method. |
|--|
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Assessment Methods

- | |
|--|
| 1- Daily tests with specific questions. |
| 2- Assign grades for homework and class participation. |
| 3- Assign students to complete research and reports on the course material. |
| 4- Monthly exams with objective and essay questions and applied problem-solving. |
-

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- | |
|--|
| 1- Explanation and clarification.
2- Model presentation method.
3- Self-learning method. |
|--|
-

Assessment Methods (Affective)

- | |
|--|
| 1- Theoretical tests.
2- Reports and studies. |
|--|

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	4	Learn real numbers	Real Numbers	Model Presentation	Formative Assessment
2	4	Learn order axioms	Order Axioms	Explanation and Clarification	Formative Assessment
3	4	Learn the completeness property	Completeness Property	Explanation and Clarification	Formative Assessment
4	4	Learn the Archimedean property	Archimedean Property	Explanation and Clarification	Formative Assessment
5	4	Learn the concept of limits	Concept of Limits	Explanation and Clarification	Formative Assessment
6	4	Learn continuity and uniform continuity	Continuity and Uniform Continuity	Explanation and Clarification	Formative Assessment
7	4	First Periodic Exam – Solving the exam and discussing errors with students			
8	4	Learn sequences of	Sequences of	Explanation and	Formative

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		functions	Functions	Clarification	Assessment
9	4	Learn series of functions	Series of Functions	Explanation and Clarification	Formative Assessment
10	4	Learn convergence	Convergence	Explanation and Clarification	Formative Assessment
11	4	Learn uniform convergence	Uniform Convergence	Explanation and Clarification	Formative Assessment
12	4	Learn Riemann integration theorem	Riemann Integration Theorem	Explanation and Clarification	Formative Assessment
13	4	Learn Lebesgue integration theorem	Lebesgue Integration Theorem	Explanation and Clarification	Formative Assessment
14	4	Review		Explanation and Clarification	Formative Assessment
15	4	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing any sources related to the topic.

Category	Details
b. Electronic References, Internet Sites, etc.	Seriyamath

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Graph Theory
Course Code	Math 3326
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year
Total Study Hours	45 hours / Number of Units: 3
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Shaker Mahmoud Salman
Email	basicmath6te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of graph, degree of a graph, definition of vertices and edges.
2. Concept of directed and undirected graphs and subgraphs.
3. Knowledge of the incidence matrix of vertices and the incidence matrix of graphs.
4. The Handshaking Theorem.
5. Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the concept of graph, degree of a graph, definition of vertices and edges.
A2	The student should know the concept of directed and undirected graphs and subgraphs.
A3	The student should know the incidence matrix of vertices and the incidence matrix of graphs.
A4	The student should know the Handshaking Theorem.
A5	Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.
A6	The student should know the concept of graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Graph and its types.
B2	Incidence matrix of vertices and incidence matrix of graphs.
B3	Handshaking Theorem.
B4	Paths, circuits, connectivity, disconnection, Hamiltonian graphs, trees and their characteristics.
B5	Graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

- | |
|--|
| 1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources. |
| 2. Informing students about the topic of the upcoming lecture for preparation purposes. |
| 3. Requesting students to submit papers on one or more of the topics under study. |
-

Assessment Methods

- | |
|--|
| 1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation. |
| 2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered. |
-

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define graphs and their types.
C2	Define the incidence matrix of vertices and the incidence matrix of graphs.
C3	The Handshaking Theorem.
C4	Graph coloring, Kuratowski's theorem, the Four Color Theorem and its applications.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to mathematical thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Concept of graph, degree, vertices, and edges	Concept of Graph, Degree, Vertices, and Edges	Discussion and Questioning	Formative Assessment
2	3	Examples of graphs	Examples of Graphs	Discussion and Questioning	Formative Assessment
3	3	Directed and undirected graphs with examples	Directed and Undirected Graphs with Examples	Discussion and Questioning	Formative Assessment
4	3	Subgraphs with examples	Subgraphs with Examples	Discussion and Questioning	Formative Assessment
5	3	Handshaking Theorem	Handshaking Theorem	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
6	3	Monthly Exam	Monthly Exam	-	Formative Assessment
7	3	Incidence matrix of vertices with examples	Incidence Matrix of Vertices with Examples	Discussion and Questioning	Formative Assessment
8	3	Incidence matrix of graphs with examples	Incidence Matrix of Graphs with Examples	Discussion and Questioning	Formative Assessment
9	3	Paths, circuits, connectivity, and disconnection	Paths, Circuits, Connectivity, and Disconnection	Discussion and Questioning	Formative Assessment
10	3	Trees and their characteristics with examples	Trees and Their Characteristics with Examples	Discussion and Questioning	Formative Assessment
11	3	Monthly Exam	Monthly Exam	-	Formative Assessment
12	3	Hamiltonian graphs	Hamiltonian Graphs	Discussion and Questioning	Formative Assessment
13	3	Graph coloring, Kuratowski's theorem	Graph Coloring, Kuratowski's Theorem	Discussion and Questioning	Formative Assessment
14	3	The Four Color Theorem with applications	The Four Color Theorem with Applications	Discussion and Questioning	Formative Assessment
15	3	Final Exam	Final Exam	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None

Category	Details
2. Main References (Sources)	Introduction to Graph Theory. Dr. Ali Aziz Ali.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

- | |
|---|
| 1. The course is developed according to requirements that emerge from curriculum development in basic education stages. |
| 2. The course is developed according to requirements that emerge from curriculum development in the global system. |

Course Description Form

Field	Details
Course Name	Curricula and Textbooks
Course Code	Coll 4214
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Prof. Dr. Ahmed Dawood Salman
Email	basicmath4te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

1. Define curricula.
2. Enumerate the characteristics of curricula.
3. Explain the importance of curricula.
4. Explain the foundations of curriculum construction.
5. Analyze the elements of the school curriculum.
6. Compare between types of curricula.
7. Evaluate curricula.
8. Explain the reasons and models for curriculum development.
9. Define the textbook in terms of its concept.
10. Enumerate the importance of the textbook.
11. Evaluate the textbook.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A2	Enable students to acquire knowledge and understanding of curricula, their characteristics, and importance.
A3	Enable students to acquire knowledge and understanding of the foundations of curriculum construction.
A4	Enable students to acquire knowledge and understanding of the elements of the school curriculum.
A5	Enable students to acquire knowledge and understanding of types of curricula.
A6	Enable students to acquire knowledge and understanding of curriculum evaluation.
A7	Enable students to acquire knowledge and understanding of curriculum development, its models, and reasons.
A8	Enable students to acquire knowledge and understanding of the textbook.

B. Skills Objectives of the Course

Code	Skill
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Code	Skill
B1	Compare between the old concept and the modern concept of curricula.
B2	Explain the foundations of curriculum construction.
B3	Analyze the school curriculum into its elements.
B4	Collect information about types of school curricula.
B5	Explain the reasons for evaluating school curricula.
B6	Explain curriculum development and its models.
B7	Write a research paper on the textbook.

Teaching and Learning Methods

- 1- Provide students with the fundamentals and topics related to curricula.
- 2- Clarify and explain the course material.
- 3- Require students to visit the library and review curriculum sources.
- 4- Improve students' skills through visiting electronic sites to gain additional knowledge of school curricula.
- 5- Use lecture, presentation, questioning, and discussion methods in some topics that require discussion.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports.
- 4- Monthly exams with objective and essay questions.

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of curriculum theories.
C2	Appreciate the importance of the textbook.

Code	Objective
C3	Connect curriculum activities to the environment.
C4	Evaluate activities.

Teaching and Learning Methods (Affective)

- | |
|--|
| 1- Use of presentation methods.
2- Drawing illustrative diagrams.
3- Brainstorming method. |
|--|

Assessment Methods (Affective)

- | |
|---|
| • Analytical exam to measure the student's ability to think, analyze, and deduce. |
| • Request comparisons between curricula in Iraq and in developed countries. |
| • Writing research on phenomena and problems related to curricula. |
| • Daily exams with intellectual and deductive questions. |

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in utilizing available resources.
D4	Skills in making comparisons on the topic.
D5	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	2	Understand the concept of curricula, their characteristics, and importance	Curricula	Discussion and Questioning	Formative Assessment
2	2	Understand the philosophical (intellectual) foundation	Foundations of Curricula	Discussion and Questioning	Formative Assessment
3	2	Understand the cultural (social) foundation	Foundations of Curricula	Discussion and Questioning	Formative Assessment
4	2	Understand the psychological (developmental) foundation	Foundations of Curricula	Discussion and Questioning	Formative Assessment
5	2	Understand educational objectives and content analysis	Elements of the School Curriculum	Discussion and Questioning	Formative Assessment
6	2	First Month Exam – Essay questions			
7	2	Understand the subject curriculum	Types of Curricula	Discussion and Questioning	Formative Assessment
8	2	Understand the activity curriculum	Types of Curricula	Discussion and Questioning	Formative Assessment
9	2	Understand the core curriculum	Types of Curricula	Discussion and Questioning	Formative Assessment
10	2	Understand the concept of curriculum evaluation, its objectives, standards, methods, and steps	Curriculum Evaluation	Discussion and Questioning	Formative Assessment
11	2	Understand curriculum development and its motivations	Curriculum Development	Discussion and Questioning	Formative Assessment
12	2	Understand the principles of curriculum development and	Curriculum Development	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
		basic models for its development			
13	2	Understand the concept of the textbook and its importance	The Textbook	Discussion and Questioning	Formative Assessment
14	2	Understand the printed and electronic textbook	The Textbook	Discussion and Questioning	Formative Assessment
15	2	Second Month Exam – Essay questions			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Curriculum and Book Analysis, Awad Jasim Mohammed Al-Tamimi, 2009. The Textbook, Awad Jasim Mohammed Al-Tamimi, 1980.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Curriculum and Book Analysis, Awad Jasim Mohammed Al-Tamimi, 2009. The Textbook, Awad Jasim Mohammed Al-Tamimi, 1980.
b. Electronic References, Internet Sites, etc.	Quality lectures and hosting on electronic websites.

Course Development Plan

The course should include: stages of curriculum development, modern curriculum theories, the importance of curriculum development, the need of educational institutions for curriculum development, models of curricula from some developed countries.

Course Description Form

Field	Details
Course Name	Sustainable Development
Course Code	MAB03SD329
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Sixth / Third Year
Total Study Hours	30 hours / Number of Units: 2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Lect. Sara Maad Abbas
Email	SARAMAAD@UODIYALA.EDU.IQ

Course Objectives

By the end of the academic year, the student should be able to:

1. Understand the concept of sustainable development and its most important definitions (environmental, economic, social, technological).
2. Understand the reasons for setting sustainable development goals.
3. Understand the characteristics of sustainable development and its sustainability requirements.
4. Understand the historical development of sustainable development.
5. Understand the requirements and main elements of sustainable development: economic aspect, social aspect, environmental aspect, technological aspect.
6. Understand the dimensions and main areas of sustainable development (social dimension, economic dimension, technological dimension).
7. Understand the trends of sustainable development in local communities and the factors affecting them.
8. Understand the philosophy of sustainable development: values and ethics of sustainable development, facts on which sustainable development is based.
9. Understand the pillars of sustainable development and indicators of their achievement.
10. Understand the role of sustainable development in achieving goals and confronting problems.
11. Understand the goals and principles of sustainable development (targets, indicators, objectives): Goal 1: No Poverty, Goal 2: Zero Hunger, Goal 3: Good Health and Well-being, Goal 4: Quality Education, Goal 5: Gender Equality, Goal 6: Clean Water and Sanitation, Goal 7: Affordable and Clean Energy, Goal 8: Decent Work and Economic Growth, Goal 9: Industry, Innovation, and Infrastructure, Goal 10: Reduced Inequalities.
12. Goal 11: Sustainable Cities and Communities, Goal 12: Responsible Consumption and Production, Goal 13: Climate Action, Goal 14: Life Below Water, Goal 15: Life on Land, Goal 16: Peace, Justice, and Strong Institutions, Goal 17: Partnerships for the Goals.
13. Iraq's vision for the Sustainable Development Goals 2030.
14. The international community's vision for the Sustainable Development Goals.

Course Outcomes, Teaching, Learning, and Assessment Methods**A. Knowledge Objectives**

Code	Objective
A1	Understand the concept of sustainable development, its history, and development.
A2	Distinguish between sustainable development and traditional development.
A3	Understand the environmental, economic, and social dimensions.
A4	Comprehend environmental, economic, and social challenges such as climate change, poverty, hunger, education, energy, and others.
A5	Understand global and local policies and strategies for achieving sustainable development, such as the Paris Climate Agreement and Agenda 2030.
A6	Understand the relationship between education and sustainable development and the role of awareness and education in bringing about positive change.

B. Skills Objectives of the Course

Code	Skill
B1	Analyze environmental, social, and economic problems.
B2	Design practical and sustainable solutions, such as proposing realistic solutions to problems like water waste and pollution.
B3	Evaluate policies and development programs, such as the ability to read and analyze public policies from a sustainability perspective.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
- 2- Model presentation method.
- 3- Lecture method.
- 4- Self-learning method.

Assessment Methods

- 1- Daily tests with specific questions.
- 2- Assign grades for homework and class participation.
- 3- Assign students to complete research and reports on the course material.
- 4- Monthly exams with objective and essay questions and applied problem-solving.

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
- 2- Reports and studies.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
1	3	Introduction to sustainable development: definition of the concept, origin and development of the term, difference between sustainable development and traditional development	Explanation and Clarification	Formative Assessment	
2	3	The three dimensions of sustainable development: environmental dimension, economic dimension, social dimension	Explanation and Clarification	Formative Assessment	
3	3	Sustainable development goals: presentation of the 17 UN goals, indicators for measuring each goal	Explanation and Clarification	Formative Assessment	
4	3	Challenges facing sustainable development: poverty, hunger, education, climate change, challenges of developing countries	Explanation and Clarification	Formative Assessment	
5	3	Environment and sustainability: relationship between humans and the environment, conservation of natural resources	Explanation and Clarification	Formative Assessment	
6	3	Green and circular economy: concepts of sustainable economy, difference between traditional and circular economy	Explanation and Clarification	Formative Assessment	
7	3	First Periodic Exam – Solving the exam and discussing errors with students			
8	3	Education for sustainable development: role of education in achieving sustainability, sustainable education strategies	Explanation and Clarification	Formative Assessment	

Week	Hours	Required Learning Outcomes	Unit / Topic Name	Teaching Method	Assessment Method
9	3	Environmental and social citizenship: individual and collective sustainable behaviors, community participation in supporting sustainability	Explanation and Clarification	Formative Assessment	
10	3	Successful experiences and initiatives: local and global sustainability initiatives, case studies from different countries	Explanation and Clarification	Formative Assessment	
11	3	Projects and applied skills: designing a sustainable project or initiative, writing reports and analyzing environmental data	Explanation and Clarification	Formative Assessment	
12	3	Individual or group research reports	Reports	Assignments and Reports	Formative Assessment
13	3	Designing an initiative or awareness campaign	Applied Project	Applied Project	Formative Assessment
14	3	Review	Explanation and Clarification	Formative Assessment	
15	3	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	United Nations (Sustainable Development Goals: Transforming Our World).

Category	Details
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Sustainable development reports issued by international organizations (UNEP, UNESCO, World Bank).
b. Electronic References, Internet Sites, etc.	Sdgs.un.org

Fourth Year – Seventh Semester Program Description

Year \ Level	Course Code	Course Name	Credit Hours
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Year \ Level	Course Code	Course Name	Credit Hours			
			Theoretical	Practical	Total Hours	Number of Units
Fourth \ Seventh	MAB03LP411	Linear Programming	2	1	3	2.5
	MAB03T412	Topology	2	2	4	3
	MAB03CA413	Complex Analysis	2	2	4	3
	Coll 4215	Educational Administration and Supervision	2	-	2	2
	SMDFO701	Specialized Teaching Methods	3	-	3	3
	ENVFI2	Environment and Health	2	-	2	2
	PROFO7	Professional Ethics	2	-	2	2
	MAB03TP421	Practicum (Observation)	-	4	4	2
	PRFOLA1	Arabic Literature	2	-	2	2
Total			17	9	25	21.5

Program Description

Year \ Level	Course Code	Course Name	Credit Hours			
			Theoretical	Practical	Total Hours	Number of Units
Fourth \ Eighth	MAB03GR415	Graduation Research Project	2	-	2	2
	MAB03TP421	Practicum (Teaching Practice/Application)	12	-	12	12
Total			14	-	14	14

Course Description Form

Field	Details
Course Name	Professional Ethics
Course Code	MAB03PE425
Semester / Year	Seventh / Fourth Year
Date of Description Preparation	1/10/2025
Available Attendance Modes	Mandatory (In-Person)
Total Study Hours	30 hours
Number of Units	2
Course Coordinator	Asst. Prof. Dr. Laith Abdulstar Iyada

Field	Details
Email	basichist24te@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- Understand the concept of professional teaching ethics.
 - Distinguish between ethics and moral character.
 - Understand the importance of ethics and methods of acquiring them.
 - Understand professional ethics in the university and society.
 - Understand professional ethics in the academic community.
 - Understand the basic concepts of professional ethics.
 - Understand the processes of moral formation.
 - Understand ethics in assessment and examinations.
-

Teaching and Learning Strategies

Cooperative Learning Strategy: Discussion based on identifying the basic concepts of the topic and then beginning instruction. This method relies on dividing students into small heterogeneous groups of (4–6) members per group. Students in each group cooperate in explaining and understanding the topic, with the professor acting as a guide and mentor.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	-	Meeting with students and introduction to course syllabus	Lecture	-
2	2	- Define the meaning of ethics and moral	Linguistic and Terminological	Lecture	Preparation Participation

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		character. - Distinguish between ethics and moral character. - Explain the status of ethics in Islam.	Definition of Ethics		
3	2	- Explain the importance of ethics. - Explain the emergence and development of the science of ethics. - Explain the role of ethics in regulating social behavior.	Importance of Ethics – Emergence and Development of the Science of Ethics	Discussion	Preparation Participation
4	2	- Understand the basic pillars of moral character. - Explain the stages of moral formation. - Distinguish between the pillars of good moral character. - Explain the importance of the pillars of moral character in forming ethical behavior.	Processes of Moral Formation – Pillars of Good Moral Character	Questioning	Daily Written Exam
5	2	- Explain the basic methods of acquiring ethics. - Explain the role of family upbringing in moral formation. - Explain the importance of learning and education in acquiring good ethics. - Explain the role of good companionship in acquiring ethics.	Methods of Acquiring Good Ethics	Micro-Teaching	Preparation Participation
6	2	- Understand the methods of learning ethics (family, school,	Methods of Teaching Ethics through	Discussion	Preparation Participation

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		society, religion and spiritual guidance). - Understand the role of social and educational institutions in moral education.	Socialization – Role of Social and Educational Institutions in Moral Education		
7	2	First Periodic Exam – Solving the exam and discussing errors with students			
8	2	- Understand the basic theories of ethics acquisition and their major theorists: - Behavioral Theory - Psychoanalytic Theory - Cognitive Theory	Theories of Ethics Acquisition	Discussion	Preparation Participation
9	2	- Understand the most important ethical principles and standards that should be observed in the context of academic assessment and examinations.	Ethics in Assessment and Examinations	Cooperative Learning	Preparation Participation
10	2	- Understand professional ethics toward society. - Understand the challenges in applying university professional ethics.	Professional Ethics in the University and Society	Discussion	Preparation Participation
11	2	- Understand the most important basic concepts of professional ethics: - Integrity – Justice – Responsibility – Respect –	Basic Concepts of Professional Ethics	Micro-Teaching	Preparation Participation

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		Transparency			
12	2	- Understand the teacher's duties in promoting education and upbringing: - Educational duties – Ethical and professional duties – Pedagogical duties – Administrative duties	Teacher's Professional Duties	Discussion	Daily Written Exam
13	2	- Understand the main reasons for interest in professional ethics: - Building trust – Individual and institutional reputation – Increasing productivity and quality – Avoiding legal problems – Promoting a positive environment	Why Should We Care About Professional Ethics?	Discussion	Preparation Participation
14	2	- Understand the main sources of professional ethics: - Laws and legislation – Cultural and societal values – Religious teachings – Philosophy and personal experience	Sources of Professional Ethics	Lecture	Preparation Participation
15	2	Second Periodic Exam – Solving the exam and discussing errors with students			

Course Assessment

Learning and Teaching Resources

Category	Details
Required Prescribed Books	None
Main References (Sources)	Professional Work Ethics, Badawi Mohammed Zaki, Cairo, 2010. Professional Ethics, Al-Hussein Mohammed, 2012.
Recommended Supporting Books and References (Scientific Journals, Reports, etc.)	Al-Fath Journal, Al-Ustadh Journal.
Electronic References, Internet Sites, etc.	Al-Maktaba Al-Shamila.

Course Description Form

Field	Details
Course Name	Practicum (Observation)
Course Code	MAB03PE327
Semester / Year	Seventh / Fourth Year
Date of Description Preparation	1/10/2025
Available Attendance Modes	Mandatory (In-Person)
Total Study Hours	60 hours
Number of Units	2
Course Coordinator	Asst. Prof. Dr. Iman Kazim Ahmed
Email	basicmath2te@uodiyala.edu.iq

Field	Details
	Asst. Lect. Sara Natiq Adnan
Email	basicmath8te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of observation.
2. Importance of observation.
3. Duties of the observing student.
4. Preparation of the lesson plan.
5. Definition of field visits.
6. School visit in basic education stage.
7. School visit in basic education stage.
8. School visit in basic education stage.
9. School visit in basic education stage.
10. School visit in basic education stage.
11. School visit in basic education stage.
12. School visit in basic education stage.
13. School visit in basic education stage.
14. Discussion of field visit observations.
15. Delivery of individual lesson.

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
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A1	Deep understanding of the concept of educational observation.
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A2	Comprehension of the objectives of educational observation in the university context (developing analytical and critical thinking of classroom performance – linking theoretical experience with practical application in classrooms – enhancing the ability to evaluate teaching practices objectively).
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A3	Individual and group observation – direct and indirect observation.
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A4	Analysis of teaching strategies.
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Code	Objective
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A5	Understanding the use of teaching aids.
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A6	Study of classroom management patterns.
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B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
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B1	Preparation and goal setting.
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B2	Documentation and precise observation.
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B3	Knowledge of what is expected of an effective teacher in the classroom.
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B4	How to provide constructive and professional feedback.
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B5	Teacher and student privacy, data confidentiality, and professional evaluation.
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B6	Analysis and discussion of results for use in improving future performance.
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Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
 2. Informing students about the topic of the upcoming lecture for preparation purposes.
 3. Requesting students to submit papers on one or more of the topics under study.
-

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration).

Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.

2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Understand teaching objectives.
C2	Understand teaching methods.
C3	Understand classroom interaction.
C4	Understand student evaluation.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester, such as various tests, participation in class and extracurricular activities.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to teaching areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	4	Introduction to educational observation	Definition of the concept, importance, and roles	Lecture and Group Discussion	Formative Assessment
2	4	Types of educational observation	Distinguishing between direct and indirect observation – individual – group	Analysis of Recorded Situations	Formative Assessment
3	4	Objectives of observation in teacher preparation programs	Analysis of the purpose of observation: development – evaluation – training	Discussion of Educational Cases	Formative Assessment
4	4	Educational observation tools	Observation forms, recording, video	Designing an Observation Form	Formative Assessment
5	4	Elements of the educational situation	Analysis of classroom behavior, teaching strategies, classroom	Observing a Lesson and Analyzing Its	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
			management	Elements	
6	4	Steps of implementing observation	Before, during, and after observation – organized steps	Classroom Simulation Application	Formative Assessment
7	4	Observation ethics	Privacy, honesty, and respect	Discussion of Real Cases	Formative Assessment
8	4	Providing feedback	Constructive observation skills	Role-playing and Feedback Model	Formative Assessment
9	4	Field applications	Practicing classroom observation inside the classroom	Conducting Visits and Observation Reports	Formative Assessment
10	4	Field applications	Practicing classroom observation inside the classroom	Conducting Visits and Observation Reports	Formative Assessment
11	4	Field applications	Practicing classroom observation inside the classroom	Conducting Visits and Observation Reports	Formative Assessment
12	4	Analysis of classroom observations	Extracting results and recommendations from observations	Presentation of Observations	Formative Assessment
13	4	Review and integration	Summarizing concepts and linking them to field experience	Group Interactive Activity	Formative Assessment
14	4	Final Exam	Measuring theoretical and applied understanding	Project Submission and Exam	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	None
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
 2. The course is developed according to requirements that emerge from curriculum development in the global system.
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Course Description Form

Field	Details
Course Name	Specialized Teaching Methods
Course Code	Math 4330
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	45 hours

Field	Details
Number of Units	2
Date of Description Preparation	1/10/2025
Course Coordinator	Sara Natiq Adnan
Email	basicmath8te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of teaching methods, definition with illustrative examples.
 2. Understanding the concept of number order and ordinal numbers with illustrative examples.
 3. How to teach numbers from 1–5.
 4. Teaching numbers from 6–10 and teaching the concept of zero with illustrative examples.
 5. Teaching the concept of addition of numbers with basic addition facts and their stages through examples.
 6. Teaching the addition algorithm with its stages through examples.
 7. Teaching the concept of subtraction of numbers with basic subtraction facts and their stages through examples.
 8. Teaching the subtraction algorithm with its stages through examples.
 9. Teaching the concept of multiplication and division of numbers with basic facts and their stages through examples.
 10. Teaching the multiplication and division algorithms with their stages through examples.
-

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the meaning of teaching methods.
A2	The student should know the concept of addition, its facts, and algorithm.
A3	The student should know the concept of subtraction, its facts, and algorithm.

Code	Objective
A4	The student should know the concept of multiplication, its facts, and algorithm.
A5	The student should know the concept of division, its facts, and algorithm.
A6	The student should know the concepts of fractions.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Addition of numbers.
B2	Subtraction of numbers.
B3	Multiplication of numbers.
B4	Division of numbers.
B5	Concept of numbers (0–10).
B6	Concept of fractions (both types).

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.
3. Requesting students to submit papers on one or more of the topics under study.

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
 2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.
-

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define the importance of arithmetic operations in life and connect them to reality.
C2	Form positive attitudes toward the subject.
C3	Develop a spirit of cooperation among students during homework solving.
C4	Appreciate the aesthetic importance of the subject.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester, such as various tests, participation in class and extracurricular activities.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to teaching areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	3	Definition of numbers (0–10) with illustrative examples	Concept of Numbers	Discussion and Questioning	Formative Assessment
2	3	Addition of numbers with their facts with examples for each type	Basic Addition Facts	Discussion and Questioning	Formative Assessment
3	3	Subtraction of numbers with their facts with examples for each type	Basic Subtraction Facts	Discussion and Questioning	Formative Assessment
4	3	Multiplication of numbers with their facts with examples for each type	Basic Multiplication Facts	Discussion and Questioning	Formative Assessment
5	3	Division of numbers with their facts with examples	Basic Division Facts	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		for each type			
6	3	Monthly Exam	Monthly Exam	-	Formative Assessment
7	3	Addition algorithm and its stages with examples	Addition Algorithm	Discussion and Questioning	Formative Assessment
8	3	Subtraction algorithm and its stages with examples	Subtraction Algorithm	Discussion and Questioning	Formative Assessment
9	3	Multiplication algorithm and its stages with examples	Multiplication Algorithm	Discussion and Questioning	Formative Assessment
10	3	Division algorithm and its stages with examples	Division Algorithm	Discussion and Questioning	Formative Assessment
11	3	Monthly Exam	Monthly Exam	-	Formative Assessment
12	3	Fractions, their types, and how to teach them with examples	Teaching Fractions	Discussion and Questioning	Formative Assessment
13	3	Operations on fractions	Operations on Fractions	Discussion and Questioning	Formative Assessment
14	3	Review		Discussion and Questioning	Formative Assessment
15	3	Final Exam	Final Exam	Discussion and Questioning	Formative Assessment

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	- Teaching Methods of Mathematics by Farid Kamil Abu Zeina. - Teaching Methods of Mathematics by Abbas Naji Al-Mashhadani.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Utilizing periodicals and sources related to the course.
b. Electronic References, Internet Sites, etc.	Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
 2. The course is developed according to requirements that emerge from curriculum development in the global system.
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Course Description Form

Field	Details
Course Name	Complex Analysis
Course Code	Math 4329
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	60 hours
Number of Units	3

Field	Details
Date of Description Preparation	1/10/2025
Course Coordinator	Shaima Adel
Email	basicmathte3@uodiyala.edu.iq

Course Objectives

By the end of the academic year, the student should be able to:

- 1- Learn complex numbers.
 - 2- Learn complex numbers.
 - 3- Learn complex numbers as a metric space.
 - 4- Learn analytic functions.
 - 5- Learn complex differentiation.
 - 6- Learn Cauchy-Riemann equations and some of their applications.
-

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Knowledge and understanding.
A2	Enable students to acquire knowledge and understanding of complex numbers.
A3	Enable students to acquire knowledge and understanding of complex numbers as a field.
A4	Enable students to acquire knowledge and understanding of complex numbers as a metric space.
A5	Enable students to acquire knowledge and understanding of analytic functions.
A6	Enable students to acquire knowledge and understanding of applications of Cauchy-Riemann equations.

B. Skills Objectives of the Course

Code	Skill
B1	Skills in complex differentiation.

Teaching and Learning Methods

- 1- Clarify and explain the course material.
 - 2- Model presentation method.
 - 3- Lecture method.
 - 4- Self-learning method.
-

Assessment Methods

- 1- Daily tests with specific questions.
 - 2- Assign grades for homework and class participation.
 - 3- Assign students to complete research and reports on the course material.
 - 4- Monthly exams with objective and essay questions and applied problem-solving.
-

C. Affective and Value Objectives

Code	Objective
C1	Appreciate the importance of studying the subject and its life applications.

Teaching and Learning Methods (Affective)

- 1- Explanation and clarification.
- 2- Model presentation method.
- 3- Self-learning method.

Assessment Methods (Affective)

- 1- Theoretical tests.
 - 2- Reports and studies.
-

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skills in using references and terminology.
D2	Skills in collecting and analyzing data on the topic.
D3	Skills in preparing specific concepts on the topic.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	4	Learn complex numbers	Complex Numbers	Presentation Method	Formative Assessment
2	4	Learn complex numbers	Complex Numbers	Explanation and Clarification	Formative Assessment
3	4	Learn complex numbers as a field	Complex Numbers as a Field	Explanation and	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
				Clarification	
4	4	Learn complex numbers as a field	Complex Numbers as a Field	Explanation and Clarification	Formative Assessment
5	4	Learn complex numbers as a metric space	Complex Numbers as a Metric Space	Explanation and Clarification	Formative Assessment
6	4	Learn complex numbers as a metric space	Complex Numbers as a Metric Space	Explanation and Clarification	Formative Assessment
7	4	First Periodic Exam – Solving the exam and discussing errors with students			
8	4	Learn analytic functions	Analytic Functions	Explanation and Clarification	Formative Assessment
9	4	Learn analytic functions	Analytic Functions	Explanation and Clarification	Formative Assessment
10	4	Learn complex differentiation	Complex Differentiation	Explanation and Clarification	Formative Assessment
11	4	Learn complex differentiation	Complex Differentiation	Explanation and Clarification	Formative Assessment
12	4	Learn Cauchy-Riemann equations and some applications	Cauchy-Riemann Equations and Some Applications	Explanation and Clarification	Formative Assessment
13	4	Learn Cauchy-	Cauchy-Riemann	Explanation	Formative

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		Riemann equations and some applications	Equations and Some Applications	and Clarification	Assessment
14	4	Review		Explanation and Clarification	Formative Assessment
15	4	Second Periodic Exam – Solving the exam and discussing errors with students			

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Complex Variables and Applications by R. Churchill, translated by Yahya Sa'id.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	- Complex Functions and Applications by Yahya Sa'id, Dr. Samir Bashir Hadid. - Utilizing any sources related to the topic.
b. Electronic References, Internet Sites, etc.	Seriyamath.

Course Development Plan

Adherence to the sectoral framework.

Course Description Form

Field	Details
Course Name	Topology
Course Code	Math 4328
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	60 hours
Number of Units	3
Date of Description Preparation	1/10/2025
Course Coordinator	Prof. Dr. Mohammed Ali Murad
Email	basicmath3te@uodiyala.edu.iq
	Asst. Lect. Doaa Riyad
Email	basicmathte2@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of real numbers, bounded sets, absolute value.
 2. Real numbers as a field – the completeness axiom, definition with illustrative examples.
 3. Topology of real numbers, definition with illustrative examples.
 4. Neighborhood of a point, union and intersection of open and closed sets with illustrative examples.
 5. Types of topology, real topology, discrete topology with illustrative examples and some related theorems.
 6. Complement of a topological space, metric space, and cover of sets.
 7. Sequences of real numbers.
 8. Cauchy sequences, algebra of sequences with some theorems.
-

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should understand the meaning of topology.
A2	The student should know the types of topology.
A3	The student should know open and closed sets.
A4	The student should know the cover of sets.
A5	The student should understand the concept of real sequences.
A6	The student should know the convergence of sequences.

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Topology and its types.
B2	Open and closed sets.
B3	Cover of sets.
B4	Real sequences.
B5	Convergence of sequences.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
 2. Informing students about the topic of the upcoming lecture for preparation purposes.
 3. Requesting students to submit papers on one or more of the topics under study.
-

Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
 2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.
-

C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define topology and its types.
C2	Define open and closed sets.
C3	Define the cover of sets.
C4	Define real sequences.
C5	Define convergence of sequences.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples from mathematics for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching mathematical knowledge to basic education students.
D2	Select examples from the basic education mathematics curriculum, each with skills addressed in the course.
D3	Evaluate the extent to which basic education students acquire application skills.
D4	Construct tests specific to mathematical thinking areas for basic education students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	4	Real numbers, bounded sets	Real Numbers, Bounded Sets	Discussion and Questioning	Formative Assessment
2	4	Absolute value, real numbers as a field – the completeness axiom	Absolute Value, Real Numbers as a Field – The Completeness Axiom	Discussion and Questioning	Formative Assessment
3	4	Topology of real numbers	Topology of Real Numbers	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
4	4	Union and intersection of open and closed sets, topological space	Union and Intersection of Open and Closed Sets, Topological Space	Discussion and Questioning	Formative Assessment
5	4	Proving some theorems related to the topics	Proving Some Theorems Related to the Topics	Discussion and Questioning	Formative Assessment
6	4	Monthly Exam	Monthly Exam	-	Formative Assessment
7	4	Neighborhood of a point	Neighborhood of a Point	Discussion and Questioning	Formative Assessment
8	4	Types of topology, real topology, discrete topology	Types of Topology, Real Topology, Discrete Topology	Discussion and Questioning	Formative Assessment
9	4	Complement of a topological space	Complement of a Topological Space	Discussion and Questioning	Formative Assessment
10	4	Metric space and cover of sets	Metric Space and Cover of Sets	Discussion and Questioning	Formative Assessment
11	4	Monthly Exam	Monthly Exam	-	Formative Assessment
12	4	Sequences of real numbers	Sequences of Real Numbers	Discussion and Questioning	Formative Assessment
13	4	Cauchy sequences	Cauchy Sequences	Discussion and Questioning	Formative Assessment
14	4	Algebra of sequences	Algebra of Sequences	Discussion	Formative

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
				and Questioning	Assessment
15	3	Final Exam	Final Exam	-	Formative Assessment

Infrastructure

Category

Details

1. Required Prescribed Books

None

2. Main References (Sources)

- Introduction to Topology by Adel Ghassan Naoum, Dr. Basil Atta Al-Hashimi. - Principles of General Topology.

a. Recommended Books and References (Scientific Journals, Reports, etc.)

Utilizing periodicals and sources related to the course.

b. Electronic References, Internet Sites, etc.

Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to requirements that emerge from curriculum development in basic education stages.
 2. The course is developed according to requirements that emerge from curriculum development in the global system.
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Course Description Form

Field	Details
Course Name	Linear Programming
Course Code	Math 4327
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	45 hours
Number of Units	2.5
Date of Description Preparation	1/10/2025
Course Coordinator	Dr. Yasmin Masoud Abdul Hassan
Email	basicmath10te@uodiyala.edu.iq

Course Objectives

1. Definition of linear programming – Algorithms for solving linear programming (computationally, graphically).
 2. Definition of games and their types.
 3. Finding the value of games.
 4. Some special methods for finding the value of games.
-

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	Define linear programming – algorithms for solving linear programming (computationally, graphically).

Code	Objective
A2	Define games and their types.
A3	Find the value of games.
A4	Use some special methods for finding the value of games.

Teaching and Learning Methods

- Lecture method (presentation).
 - Dialogue and discussion method.
-

Assessment Methods

- Achievement exams (daily, monthly, semester).
-

C. Affective and Value Objectives

Code	Objective
C1	Understand the importance of random variables in daily life.
C2	Understand the beauty and consistency of probability topics.
C3	Understand the directions of the subject matter.
C4	Understand the aesthetic values of the subject matter.

Teaching and Learning Methods (Affective)

- Lecture method (presentation).
- Dialogue and discussion method.

Assessment Methods (Affective)

- Achievement exams (daily, monthly, semester).
-

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
------	-------

D1	Learner's ability to deal positively with the course material.
----	--

D2	Raise the scientific and practical level of the learner.
----	--

D3	Give the learner an opportunity to demonstrate their talent.
----	--

D4	Learner's ability to perform computational skills in dealing with the course material.
----	--

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	3	Definition of linear programming – algorithms for solving linear programming (computationally, graphically)	Solving Linear Programs	Discussion and Questioning	Formative Assessment
2	3	Graphical method, simplex method (slack and artificial variables)	Methods of Solving Linear Programming	Discussion and Questioning	Formative Assessment
3	3	Transportation problems and their handling, finding	Applications of Linear	Discussion and	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		the initial basic solution	Programming	Questioning	
4	3	Northwest corner method, least cost method, Vogel's method	The Normal Curve	Discussion and Questioning	Formative Assessment
5	3	Life examples in presenting linear programming problems	Life Applications of Linear Programming	Discussion and Questioning	Formative Assessment
6	3	Monthly Exams (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
7	3	Finding the initial and optimal solution	Finding the Initial and Optimal Solution	Discussion and Questioning	Formative Assessment
8	3	Concept of game theory, definition of games and their types	Game Theory	Discussion and Questioning	Formative Assessment
9	3	Concept of game value, examples for clarification	Finding the Value of Games	Discussion and Questioning	Formative Assessment
10	3	Minimax method, concept and application steps	Some Special Methods for Finding the Value of Games	Discussion and Questioning	Formative Assessment
11	3	Monthly Exam (Essay + Objective)	Monthly Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment
12	3	Analytical method, concept and application steps	Some Special Methods for Finding the Value of Games	Discussion and Questioning	Formative Assessment

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
13	3	Graphical method, concept and application steps	Some Special Methods for Finding the Value of Games	Discussion and Questioning	Formative Assessment
14	3	Simplex method, concept and application steps	Some Special Methods for Finding the Value of Games	Discussion and Questioning	Formative Assessment
15	3	End of Semester Exam (Essay + Objective)	End of Semester Exam (Essay + Objective)	Discussion and Questioning	Formative Assessment

Infrastructure

Category

Details

1. Required Prescribed Books

Operations Research / Abdul Dhiab Jaza'a, 1st Edition 1985, 2nd Edition 1988.

2. Main References (Sources)

1. Introduction to Operations Research / Fathi Hamdan, Rashid Mar'i. 2. Experimental Statistics / Dr. Lutfi Hindi (1971).

a. Recommended Books and References (Scientific Journals, Reports, etc.)

Sources related to the course content.

b. Electronic References, Internet Sites, etc.

Course Development Plan

Expand the course syllabus in line with the cognitive development of the subject matter.

Course Description Form

Field	Details
Course Name	Educational Administration and Supervision
Course Code	Coll 4215
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	30 hours
Number of Units	2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Prof. Dr. Ahmed Dawood Salman
Email	basicmath4te@uodiyala.edu.iq

Course Objectives

The student should be familiar with the following concepts:

1. Concept of administration and its development, educational administration, school administration.
2. Understanding the most important theories of administration.
3. Understanding the most important functions of administration.
4. Concept of leadership, its development, and its most important theories.
5. Understanding educational supervision and methods of educational supervision.
6. Evaluation in educational supervision (evaluation of the principal, evaluation of the teacher, evaluation of students).

Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should know the concept of administration, educational administration, and school administration.
A2	The student should know the most important theories of administration, its functions, and its patterns.
A3	The student should know the concept of leadership, educational leadership, and its most important theories.
A4	The student should know educational supervision, its development, and its most important methods.
A5	The student should know educational evaluation and its importance (principal, teacher, students).

B. Skills Objectives of the Course

The student should develop skills in the following concepts:

Code	Skill
B1	Educational administration.
B2	Educational leadership.
B3	Educational supervision.
B4	Educational evaluation.

Teaching and Learning Methods

At the beginning of the semester, students are informed of the course syllabus and information sources (related books, periodicals, university theses). The syllabus is distributed across the weeks of the semester, along with the assessment methods to be followed, as follows:

1. Preparation of lectures according to the sequence outlined in the course syllabus using the aforementioned information sources.
2. Informing students about the topic of the upcoming lecture for preparation purposes.

3. Requesting students to submit papers on one or more of the topics under study.
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Assessment Methods

1. Conducting two mid-semester exams: the first after the fifth week of the semester and the second after the eleventh week. Each exam considers cognitive levels (recall, application, exploration). Assessment contributes 40% of the total achievement, taking into account student attendance and daily participation.
 2. End-of-semester exam accounting for 60% of achievement according to ministry timings. When setting questions, comprehensiveness of the course content and cognitive levels (recall, application, exploration) are considered.
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C. Affective and Value Objectives

The student should be able to:

Code	Objective
C1	Define the most important skills of a successful educational leader.
C2	Define the most important skills of a successful principal.
C3	Define the type of successful leadership and educational administration.
C4	Distinguish the best evaluation methods in educational supervision.

Teaching and Learning Methods (Affective)

The direct instruction method is typically used, where skills are taught directly and explicitly, reinforced with examples of administration for basic education levels.

Assessment Methods (Affective)

These are included within the course assessment processes conducted during and at the end of the semester.

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Employ acquired skills in teaching the most important management skills to students.
D2	Select examples or models of administration and present their positives and negatives.
D3	Evaluate the extent to which students have acquired evaluation skills.
D4	Construct tests to identify the most important skills acquired by students through the course.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	Concept of administration, educational administration, school administration with examples	Concept of Administration, Educational Administration, School Administration with Examples	Discussion and Questioning	Formative Assessment
2	2	Theories of educational administration	Theories of Educational Administration	Discussion and Questioning	Formative Assessment
3	2	Functions of educational administration	Functions of Educational Administration	Discussion and Questioning	Formative Assessment
4	2	Patterns of	Patterns of	Discussion	Formative

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		educational administration	Educational Administration	and Questioning	Assessment
5	2	Leadership – concept and development	Leadership – Concept and Development	Discussion and Questioning	Formative Assessment
6	2	Monthly Exam	Monthly Exam	-	Formative Assessment
7	2	Most important theories of leadership	Most Important Theories of Leadership	Discussion and Questioning	Formative Assessment
8	2	Some models of leadership behavior – concept and types	Some Models of Leadership Behavior – Concept and Types	Discussion and Questioning	Formative Assessment
9	2	Educational supervision and its development	Educational Supervision and Its Development	Discussion and Questioning	Formative Assessment
10	2	Types of educational supervision and methods of educational supervision	Types of Educational Supervision and Methods of Educational Supervision	Discussion and Questioning	Formative Assessment
11	2	Monthly Exam	Monthly Exam	-	Formative Assessment
12	2	Evaluation in educational supervision	Evaluation in Educational Supervision	Discussion and Questioning	Formative Assessment
13	2	Evaluation of the principal, teacher, and students	Evaluation of the Principal, Teacher, and Students	Discussion and Questioning	Formative Assessment
14	2	Final Review			

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
15	2	Final Exam	Final Exam	Discussion and Questioning	Formative Assessment

Infrastructure

Category

Details

1. Required Prescribed Books

None

2. Main References (Sources)

Educational Administration – Concept, Theories, and Tools by Dr. Salah Abdul Hamid Mustafa, Dr. Najat Abdullah Al-Nabih.

a. Recommended Books and References (Scientific Journals, Reports, etc.)

Utilizing periodicals and sources related to the course.

b. Electronic References, Internet Sites, etc.

Utilizing the Internet as a known source of information.

Course Development Plan

1. The course is developed according to changes and developments in society.
2. The course is developed according to requirements that emerge from curriculum development in the global system.

Course Description Form

Field	Details
Course Name	Environment and Health
Course Code	ENVFI2
Available Attendance Modes	Mandatory (In-Person)
Semester / Year	Seventh / Fourth Year
Total Study Hours	30 hours
Number of Units	2
Date of Description Preparation	1/10/2025
Course Coordinator	Asst. Prof. Dr. Zuhair Hussein Jawad
Email	basicsci6@uodiyala.edu.iq

Course Objectives

The student should be able to:

- 1- Define health.
 - 2- Enumerate the most important fields of health education.
 - 3- Understand the concept of health and health education.
 - 4- Enumerate the methods and techniques of health education.
 - 5- Define disease.
 - 6- Explain the causes of disease transmission.
 - 7- Mention the symptoms of diseases and malnutrition.
 - 8- Distinguish between healthy and unhealthy habits.
 - 9- Explain first aid and its correct methods when needed.
 - 10- Enumerate the factors and causes of diseases.
 - 11- Explain the benefit of vaccines in preserving human life.
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Course Outcomes, Teaching, Learning, and Assessment Methods

A. Knowledge Objectives

Code	Objective
A1	The student should know the concept of health.
A2	The student should understand the correct methods of maintaining an environment free from diseases.
A3	The student should explain how to prevent diseases.
A4	The student should analyze disease symptoms correctly.
A5	The student should explain the causes of disease.
A6	The student should distinguish between healthy and unhealthy habits.
A7	The student should enumerate the methods and techniques of health education.
A8	The student should identify diseases resulting from malnutrition.
A9	The student should deduce the relationship between food, physical development, and health.

B. Skills Objectives of the Course

Code	Skill
B1	Draw a diagram illustrating the relationship between health and food.
B2	Draw a diagram illustrating the relationship between health, vaccines, and infectious diseases.
B3	Ability to preserve the environment, whether individually or collectively.
B4	Ability to transform acquired knowledge into essential practical skills – the tangible outcome of actions, behavior, and knowledge.

Teaching and Learning Methods

- Lecture method.
 - Questioning method.
 - Discussion method.
 - Problem-solving.
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Assessment Methods

- Written exam.
 - Oral exam.
 - Scientific research and reports.
-

C. Affective and Value Objectives

Code	Objective
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C1	Appreciate the role of health departments in protecting citizens from disease.
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C2	Appreciate the role of scientists and doctors in discovering many types of vaccines to save humanity from deadly diseases.
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Teaching and Learning Methods (Affective)

- Lecture method.
 - Discussion method.
 - Questioning method.
 - Problem-solving.
 - Discovery.
-

Assessment Methods (Affective)

D. General and Transferable Qualification Skills (Other Skills Related to Employability and Personal Development)

Code	Skill
D1	Skill in dealing with disease.
D2	Skill and understanding of health education methods and techniques.
D3	Skill in linking disease symptoms with prevention.
D4	Understanding the ideal method of choosing healthy food.

Course Structure

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
1	2	The student should know the concept of public health and how to achieve it	Concept of Public Health, Its Components, and How to Achieve It	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
2	2	The student should understand health and environmental education and its objectives – enumerate the risks threatening health	Concept of Health Education and Its Objectives	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
3	2	The student should enumerate the fields of health education	Fields of Health	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
4	2	The student should mention the methods and objectives of health education	Methods and Techniques of Health Education	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
5	2	The student should explain how to maintain school health	School Health	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
6	2	The student should explain the objectives of health education	Objectives of Health Education	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
7	2	The student should analyze food elements and their benefits – explain the concept of a balanced diet	Food Elements	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
8	2	First Month Exam			Written and Oral Performance Tests
9	2	The student should understand the importance of vaccines for children	Factors and Causes of Diseases	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
10	2	The student should know the danger of communicable diseases – explain methods of combating infectious diseases	Communicable Diseases	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
11	2	The student should enumerate the most important diseases affecting children	Diseases Affecting Children	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
12	2	The student should understand that	Some Harmful Habits	Lecture, Laboratory,	Written and Oral

Week	Hours	Required Learning Outcomes	Unit/Topic Name	Teaching Method	Assessment Method
		smoking, alcohol, and drug addiction are harmful habits		Discussion, Simulation	Performance Tests
13	2	The student should understand the necessity of learning first aid – identify the elements of first aid	First Aid	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
14	2	The student should explain the necessity of the home pharmacy	Home Pharmacy	Lecture, Laboratory, Discussion, Simulation	Written and Oral Performance Tests
15	2	Second Month Exam			Written and Oral Performance Tests

Infrastructure

Category	Details
1. Required Prescribed Books	None
2. Main References (Sources)	Health Education, Thamer Al-Mallah, 2012. Health Education and First Aid, 2009. Internet.
a. Recommended Books and References (Scientific Journals, Reports, etc.)	Public health books. Articles on environmental health. Scientific reports.
b. Electronic References, Internet Sites, etc.	http://kenanaonline.com/users/tamer2011-com/posts/435357 - Concept of Health Education. http://mu.edu.iq/ ...

Course Development Plan

- Provide presentation means in lecture halls for showing films and videos about diseases and everything related to health education.
 - Add modern diet programs for prevention of obesity.
 - Establish a relationship with the Diyala Health Department to allow our students field visits to learn about the health reality practically and how to advance it in our beloved country.
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Course Description Form

Field

Details

Course Name

Arabic Literature

Course Code

PRFO LA1

Available Attendance Modes

Mandatory (In-Person)

Semester / Year

Seventh / Fourth Year

Total Study Hours

30 hours

Number of Units

2

Date of Description Preparation

1/10/2025

Course Coordinator

Dr. Rabia Hussein Mahdi

Email

basica59te@uodiyala.edu.iq

Course Objectives

- 1- Introduce students to the concept of Arabic literature and its historical development.
 - 2- Identify the most prominent literary schools and intellectual trends.
 - 3- Develop literary appreciation skills and textual analysis.
 - 4- Enhance the correctness of the Arabic language in oral and written expression.
 - 5- Develop critical thinking through the study of literary texts.
-

Learning Outcomes

By the end of the course, the student should be able to:

1. Define the basic concepts of Arabic literature.
 2. Distinguish between the characteristics of different literary periods.
 3. Analyze poetic and prose texts.
 4. Employ rhetorical methods in understanding texts.
 5. Prepare reports and brief presentations on literary topics.
-

Teaching and Learning Strategies

1. Lecture.
 2. Discussion and dialogue.
 3. Cooperative learning.
 4. Presentations.
 5. Literary text analysis.
-

Assessment Methods

1. Short tests.
 2. Assignments and reports.
 3. Class participation.
 4. Mid-semester exam.
 5. Final exam.
-

Course Syllabus

Week

Topic

Week	Topic
Week 1	Concept of Arabic Literature and Its Importance
Week 2	Literature in the Pre-Islamic Era
Week 3	Literature in Early Islam
Week 4	Literature in the Umayyad Era
Week 5	Literature in the Abbasid Era
Week 6	Andalusian Literature
Week 7	Literature in the Era of Decline
Week 8	Mid-Semester Exam
Week 9	Modern Arabic Literature
Week 10	Schools of Modern Poetry
Week 11	Arabic Short Story and Novel
Week 12	Drama and Essay
Week 13	Modern Literary Criticism
Week 14	Analysis of Poetic and Prose Texts
Week 15	General Review

Sources

- History of Arabic Literature – Shawqi Daif.
- On Pre-Islamic Literature – Taha Hussein.
- Modern Arabic Literature – Mohammed Mohammed Hussein.
- Modern references and sources as determined by the instructor.

