

*Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.
Al-Ayen University*

Academic Program Specification Form For The Academic

University:

College :

Number Of Departments In The College :

Date Of Form Completion :

Dean's Name

Date : / /

Signature

*Dean's Assistant For
Scientific Affairs*

Date : / /

Signature

*The College Quality Assurance
And University Performance
Manager*

Date : / /

Signature

Quality Assurance And University Performance Manager

Date : / /

Signature

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

[illegible]

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals

- A1.
- A2.
- A3.
- A4.
- A5.
- A6.

B. The skills goals special to the programme .

- B1.
- B2.
- B3.

Teaching and Learning Methods

Assessment methods

C. Affective and value goals

- C1.
- C2.
- C3.
- C4.

Teaching and Learning Methods

Assessment methods

- D1.
- D2.
- D3.
- D4.

D2.

D3.

D4.

Assessment Methods

Level/Year

Course or Module
Title

Credit Hours

Practical

Theoretical

			Practical	Theoretical

13. Personal Development Planning

14. Admission criteria .

15. Key sources of information about the programme

AL AYIN IRAQI

Curriculum Skills Map

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

[illegible]

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Ayen University, College of Engineering
2. University Department/Centre	Department of Biomedical
3. Course title/code	Engineering Mathematics - MATH210
4. Modes of Attendance offered	4 hours weekly theoretical and 1hour for tutorial
5. Semester/Year	First semester, 2024/2025
6. Number of hours tuition (total)	150 h/sem
7. Date of production/revision of this specification	29/9/2024
8. Aims of the Course:	
To enable the students to identify the following:	
1. Further Techniques in Integration, and its applications concerning Integration by Parts, Tabular Integration, Trigonometric Integrations.	
2. Integration by Trigonometric Substitutions, Integration by $Z=\tan(x/2)$ Substitutions, Partial Fractions Integration, Improper Integrals.	
3. Convergence and Divergence Theorem, Sequences of Numbers, Limit of Sequences, Infinite Series, Definition and Properties.	
4. Partial Sums test, Geometric Series, Alternating Series, Ratio test, Root test, Comparison test, Integral test.	
5. Harmonic Series, P-Series, Power Series, Taylor's Theorem, Maclaurin's Series, Intervals of Convergence.	

6. Matrices and Determinants, Definition of Matrix, Properties, Special Matrices, Matrix Algebra, Definition of Determinant, Properties, Cofactors and Cominors,
7. Evaluation of determinants, Inverse of Matrix, Applications, Cramer's Rule.

9. Learning Outcomes, Teaching ,Learning and Assessment Methods

A- Cognitive goals:

- A1** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
- A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

B. The skills goals special to the course.

- B1.** Analyze and interpret finding data
- B2.** Identify the appropriate technique for each problem.

10. Teaching and Learning Methods

10.1 Table: Competencies vs Teaching and Learning and Learning Methods

- Lectures
- Presentation and movies
- Discussions
- Tutorial and Sketches
- Practical and Laboratory
- Problem Solving
- Brainstorm
- Research and Report

1. Assessment methods

Assessment Methods	Schedule (week)	Weighing (%)
Final Exam	15	50%
Tutorial	2,4,6,8,11,12	10%
Mid term	5,10	10%
Assignment	3,4,5,6,7,8,9,11,12,13	10%
Quizzes	3, 7	10%
Attendance	Every week	10%

C. Affective and value goals

C1.
C2.
C3.
C4.

Teaching and Learning Methods

Assessment method

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1.
D2.
D3.
D4.

10.Course Structure

Week	Hours	ILOs	Unit/ Module or Topic Title	Teaching Method	Assessment Method
Week 1	4		Introduction to Further Techniques in Integration	- Whiteboard - Power Point (PPT)	-
Week 2	4	A.1.1.1 A.1.1.2	- Integration by Parts - Tabular Integration, Trigonometric Integrations. - Integration by Trigonometric Substitutions.	- Interactive Group Presentation - Discussions - Research and Report	assignment
Week 3	4	A.1.1.1 A.1.1.2	- Integration by $Z = \tan(x/2)$ - Substitutions, Partial - Fractions Integration - Improper Integrals.	- Tutorial and Sketches - Cooperation Work - Practical and Laboratory - Problem Solving	quiz
Week 4	4	A.1.1.1	Convergence and		

		A.1.1.2	Divergence Theorem • Sequences of Numbers • Limit of Sequences • Infinite Series • Definition and Properties.	- Report & discussion assessment	
Week 5	4	A.1.1.1 A.1.1.2	• Partial Sums test • Geometric Series • Alternating Series		
Week 6	4	A.1.1.1 A.1.1.2	• Ratio test • Root test		
Week 7	4	A.1.1.1 A.1.1.2	• Comparison test • Integral test.		
Week 8	4		Mid-term exam		
Week 9	4	A.2.1.1	• Harmonic Series • P-Series • Power Series		
Week 10	4	A.2.1.1	• Taylor's Theorem • Maclaurin's Series • Intervals of convergence.		
Week 11	4	A.1.1.1 A.1.1.2	• Matrices and Determinants. • Definition of Matrix. • Properties. • Special Matrices. • Matrix Algebra.		
Week 12	4	A.1.1.1 A.1.1.2	• Definition of Determinant • Properties • Cofactors and Cominors		
Week 13	4	A.1.1.1 A.1.1.2	• Evaluation of determinants • Inverse of Matrix		
Week 14	4	A.1.1.1 A.1.1.2	• Applications		
Week 15	4	A.1.1.1 A.1.1.2	• Cramer's Rule		
Week 16	4		Final Exam		

11. Infrastructure

1 . Books Required reading:

ADVANCED ENGINEERING

	MATHEMATICS, ERWIN KREYSZIG, 10 th edition
2. Main References (Sources)	
A- Recommended books and References (scientific journals, reports...).	CALCULUS, Paul Dawkins
B- Electronic references, Internet sites ...	

12. The development of the curriculum plan

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