

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

Academic Program Specification Form for the Academic

*University: University of Baghdad
College : AlKhwarizmi College of Engineering
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

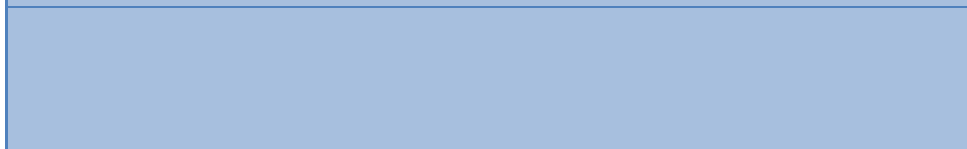
PROGRAMME SPECIFICATION

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.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Program Title	Information Theory
4. Title of Final Award	BSc degree in Information and Communication Engineering
5. Modes of Attendance offered	Attendance is according to the university rules in 2023-2024
6. Accreditation	Abet
7. Other external influences	
8. Date of production/revision of this specification	2023-2024
9. Aims of the Program	
The course aims to give the student the following subjects: Introduction to Information, probability, entropy, average information rate, maximum source entropy, modeling of digital channel, channel capacity, Markova source	

10. Learning Outcomes, Teaching, Learning and Assessment Methods
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<p>A. Knowledge and Understanding</p> <p>At the completion of the course, students will be able to...</p> <ul style="list-style-type: none"> a. understand the basic laws of probability theory b. Learn how to measure the information and its relation with the communication systems. c. understand the information measurement methods. d. understand the different communication channels and how to measure their capacities. e. Learn how to compress the data using source coding.



<p>B. Subject-specific skills</p> <p>In addition to the measurable student learning outcomes listed above, students enrolled in electric circuits Course will be required to demonstrate their more in-depth knowledge of the course material by</p> <ul style="list-style-type: none"> B1. Solving additional, more challenging exam problems.
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Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations
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Assessment methods

homework 10%

quizzes+ oral exam - 20%

midterm -10%

final exam - 60%

C. Affective and value goals

C1. Ability to apply knowledge of mathematics, science and engineering.

C2. Ability to identify, formulate and solve engineering problems.

C3. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

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D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Ability to design and conduct experiments.

D2. Ability to design a system, component or process to meet desired needs

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment Methods

homework 10%
 quizzes+ oral exam - 20%
 midterm -10%
 final exam - 60%

11. Program Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
3 th		Information Theory		Bachelor Degree Requires (3) credits

13. Personal Development Planning
<ol style="list-style-type: none"> 1. Provide strong foundation in mathematical, scientific and engineering fundamentals necessary to analyze, formulate and solve engineering problems in the field of Information and Communication Engineering. 2. Enhance the skills and experience in defining problems in Information and Communication Engineering design and implement, analyzing the

experimental evaluations, and finally making appropriate decisions.

14. Admission criteria .

According to the rules of Ministry of Higher Education and Scientific Research in Iraq.

15. Key sources of information about the programme

1. Books
2. Trusted Internet sources related to the Program
3. Papers.

Curriculum Skills Map

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

				Programme Learning Outcomes															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
4 th		Wi																	

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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 program specification.

1. Teaching Institution	
2. University Department/Centre	University of Baghdad/Al_Khwarizmi College of Engineering
3. Course title/code	Information Theory
4. Modes of Attendance offered	attendance is according to the university rules in 2022-2023
5. Semester/Year	1 st semester/ 3 th year
6. Number of hours tuition (total)	45
7. Date of production/revision of this specification	2023
8. Aims of the Course	
	The course aims to give the student the following subjects: Introduction to Information, probability, entropy, average information rate, maximum source entropy, modeling of digital channel, channel capacity, Markova source.

9- Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

At the completion of the course, students will be able to...

- a. understand the basic laws of probability theory
- b. Learn how to measure the information and its relation with the communication systems.
- c. understand the information measurement methods.
- d. understand the different communication channels and how to measure their capacities.
- e. Learn how to compress the data using source coding.

B. The skills goals special to the course.

In addition to the measurable student learning outcomes listed above, students enrolled in electric circuits Course will be required to demonstrate their more in-depth knowledge of the course material by

- B1. Solving additional, more challenging exam problems.

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

homework 10%

quizzes+ oral exam - 20%

midterm -10%

final exam - 60%

- C1. Ability to apply knowledge of mathematics, science and engineering.
- C2. Ability to identify, formulate and solve engineering problems.
- C3. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

- homework 10%
- quizzes+ oral exam - 20%
- midterm -10%
- final exam - 60%

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

- D1. Ability to design and conduct experiments.
- D2. Ability to design a system, component or process to meet desired needs

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Identify the fundamentals of information.	Introduction to Information Theory. The Concept of Information.	Class room lecture	Scheduled Quizzes
2	3	Identify the fundamental of Probability theory	First concepts of Probability theory.	Class room lecture	
3	3	Identify the fundamental of Probability theory	Conditional and joint entropy. Mutual Information.	Class room lecture	
4	3	Identify the fundamentals of information theory.	Relationship between I and H. Joint entropy in terms of conditional entropy.	Class room lecture	
5	3	Identify the fundamentals of information theory.	Maximum entropy of a discrete source.	Class room lecture	
6	3	Identify the fundamentals of communication channels	Discrete Memoryless Channels. Channel Capacity.	Class room lecture	
7	3	Identify the fundamentals of communication channels	Capacity of Special Channels	Class room lecture	
8	3	Identify the fundamentals of communication channels	Capacity of a (AWGN) Channel. Capacity of Infinity Bandwidth Channel.	Class room lecture	
9	3	Identify the fundamentals of communication channels	Markove Source.	Class room lecture	
10	3	Identify the fundamentals of the Coding	Introduction to Coding. Information theory Vs. Coding theory.		Mid term exam
11	3	Identify the fundamentals of the Coding	Type of codes: fixed length	Class room lecture	

12	3	Identify the fundamentals of the Coding	Type of codes: variable length	Class room lecture	
13	3	Identify the fundamentals of the source Coding	Source Coding Shannon-Fano Coding	Class room lecture	
14	3	Identify the fundamentals of the source Coding	Huffman Coding	Class room lecture	
15	3	Identify the fundamentals of the source Coding	Lempel-Ziv coding	Class room lecture	

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Stephen C. Wilson, "Digital Communication and coding", Prentice-Hall
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	Summer training, Scientific visits