

*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:

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.

1. Teaching Institution	Baghdad University / Al Khwarizmi College of engineering
2. University Department/Centre	Information and Communication Eng. Dept
3. Programme Title	Digital Communication / ICE 341
4. Title of Final Award	BSc degree in Information and Communication Engineering
5. Modes of Attendance offered	Full time
6. Accreditation	
7. Other external influences	
8. Date of production/revision of this specification	oct 2023

9. Aims of the Programme

The course aim to give the student the following subjects:

Signal transmission through linear system, distortion, Gaussian probability density function , Q-function , Sampling Theorem, Pulse Modulation, PCM, DPCM , DM, D Σ Modulator, ADM, Multiplexing TDM, Detection of binary signals in AWGN.

Digital modulation techniques: ASK, FSK, PSK, DPSK, demodulation, carrier recovery, M-ary signaling MPSK.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals .B

At the completion of the subject items the students will be able to:

A1. Discrimination between analog and digital communication systems

A2. Understanding the advantages and disadvantages of digital communication systems

A3. Pinpoint the different digital communication system stages

A4. Analyze the specific digital communication system requirements

A5. Discrimination between power and bandwidth efficient system

A6 . knowledge about different communication channel effects

B. The skills goals special to the programme .

B1. Analyze the specific digital communication system requirements

B2. Design a specific digital communication system for a given rate, bandwidth, probability of error requirements

B3. decision for selection of specific technique to accommodate specific

Teaching and Learning Methods

Formal lectures , group tutorials, home assignments , and self-study, practical classes.

Assessment methods

Quizzes 40%
Final Written Exam 60%

C. Affective and value goals

C. Thinking Skills
<p>C1. How to use different techniques with different application requirements</p> <p>C2. Cost effective systems requirements decision</p> <p>C3. Security criterion with Digital communication</p> <p>C4. Ease of implementation</p>
Teaching and Learning Methods
Lectures and presentations

<p>D. General and Transferable Skills (other skills relevant to employability and personal development)</p> <p>D1. Communication system management</p> <p>D2. How to establish a communication platform</p> <p>D3. How to make use of installation documentation</p> <p>D4. Conduct laboratory experiments experiments</p>
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Assessment Methods

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11. Programme Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
3 rd		Digital Communication		Bachelor Degree Requires (3) credits

13. Personal Development Planning

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14. Admission criteria .

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15. Key sources of information about the programme

Books and Internet

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	Baghdad University / Al Khwarizmi College of engineering
2. University Department/Centre	Information and Communication Eng. Dept
3. Course title/code	Digital Communication / ICE 341
4. Modes of Attendance offered	Full time
5. Semester/Year	2023-2024
6. Number of hours tuition (total)	45
7. Date of production/revision of this specification	oct 2023
8. Aims of the Course	<p>The course aim to give the student the following subjects: Signal transmission through linear system, distortion, Gaussian probability density function , Q-function , Sampling Theorem, Pulse Modulation, PCM, DPCM , DM, DΣ Modulator, ADM, Multiplexing TDM, Detection of binary signals in AWGN. Digital modulation techniques: ASK, FSK, PSK, DPSK, demodulation, carrier recovery, M-ary signaling MPSK.</p>

9. Learning Outcomes, Teaching ,Learning and Assessment Method	
Knowledge and Understanding -A	
At the completion of the subject items the students will be able to:	
A1. Discrimination between analog and digital communication systems	
A2. Understanding the advantages and disadvantages of digital communication systems	
A3. Pinpoint the different digital communication system stages	
A4. Analyze the specific digital communication system requirements	
A5. Discrimination between power and bandwidth efficient system	
A6 . knowledge about different communication channel effects	
B. Subject-specific skills	
B1. Analyze the specific digital communication system requirements	
B2. Design a specific digital communication system for a given rate, bandwidth, probability of error requirements	
B3. decision for selection of specific technique to accommodate specific	
Teaching and Learning Methods	
Formal lectures , group tutorials, home assignments , and self-study, practical classes.	
Assessment methods	
Home work 10%	
Quizzes 15%	
Mid term exam 15%	
Final Written Exam 60%	
C. Thinking Skills	
C1. How to use different techniques with different application requirements	
C2. Cost effective systems requirements decision	
C3. Security criterion with Digital communication	
C4. Ease of implementation	

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

D1. Communication system management

D2. How to establish a communication platform

D3. How to make use of installation documentation

D4. Conduct laboratory experiments experiments

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Discrimination between analog and digital communication	Advantages and disadvantages of digital modulation, why modulation, classification of signals	Class room lecture	Scheduled Quizzes
2	3	Introducing power and energy signals	Classification of signals	Class room lecture	
3	3	Define bandwidth ,distortion caused by channel nonlinearities	Signal Bandwidth, distortion over communication channel	Class room lecture	
4	3	Derive Erfc	Gaussian pdf, Q-function	Class room lecture	
5	3	Discuss the sampling of continuous signals	Sampling theorem	Class room lecture	
6	3	Introducing the pulse code modulation , and associated quantization noise	PCM, Quantization, Quantization Noise	Class room lecture	
7	3	Introducing Δ Modulator and quantization noise, slope overload criterion	Δ Modulator, slope overload, Quantization Noise	Class room lecture	
8	3	How to overcome slope overload $\Delta\Sigma$ modulator,	$\Delta\Sigma$ modulator, adaptive Δ Modulator	Class room lecture	
9	3	Introducing signal multiplexing	TDM, PCM-TDM	Class room lecture	
10	3	Different line coding with their bandwidth and power requirements	Line coding	Class room lecture	
11	3	Different carrier modulation ,	Digital modulation ASK, PSK , FSK	Class room lecture	

		demodulation ,of binary signalling			
12	3	Different carrier modulation , demodulation ,of binary signalling	DPSK, coherent & non coherent detection	Class room lecture	
13	3	Bandwidth efficient and power efficient criterion and Shannon channel capacity	M-ary signaling, Shannon channel capacity	Class room lecture	
14	3	Performance comparison of Probability of error for baseband and carrier signalling	Error performance of binary signals baseband	Class room lecture	
15	3	The need for synchronization frequency, time	Synchronization methods	Class room lecture	

11. Infrastructure	
1. Books Required reading:	Text book : " Modern Digital and analog communication systems " B.P. Lathi 2010 Additional reference: " Digital Communications, fundamentals and applications " B. Sklar 2001
2. Main references (sources)	: " Modern Digital and analog communication systems " B.P. Lathi 2010
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	

12. The development of the curriculum plan
- Improve the skills of students
2- Develop access to digital libraries for all learners.
3- Enhance the digital technology which is the core in all areas of the curriculum.