

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 System / 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	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 , Detection of binary signals in AWGN. Probability of error for bandpass signals {ASK,PSK,FSK,QPSK } , coherent detection, synchronization methods, ISI, Eye diagram, ZF channel equalization, MCM & OFDM, Spread

Spectrum Systems {DSSS & FHSS}.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A- Knowledge and Understanding

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
- 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 communication requirements.

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. 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	

D. General and Transferable Skills (other skills relevant to employability and personal development)	
<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.</p>	
Assessment Methods	

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

--	--	--	--	--

13. Personal Development Planning

--

14. Admission criteria .

--

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 System / ICE 341
4. Modes of Attendance offered	Full time
5. Semester/Year	2020-2021
6. Number of hours tuition (total)	45
7. Date of production/revision of this specification	2023
8. Aims of the Course	The course aim to give the student the following subjects: Signal transmission through linear system, distortion, Gaussian probability density function , Q-function , Detection of binary signals in AWGN. Probability of error for bandpass signals {ASK,PSK,FSK,QPSK } , coherent detection, synchronization methods, ISI, Eye diagram, ZF channel equalization, MCM & OFDM, Spread Spectrum Systems {DSSS & FHSS}.

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 communication requirements.

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	Performance comparison of Probability of error for baseband and carrier signalling	Error performance of binary signals baseband	Class room lecture	Scheduled Quizzes
2	3	Performance comparison of Probability of error carrier signalling	ASK, PSK, FSK, QPSK error performance	Class room lecture	
3	3	Performance comparison of Probability of error carrier signalling	ASK, PSK, FSK, QPSK error performance	Class room lecture	
4	3	The need for synchronization frequency, time	Synchronization methods	Class room lecture	
5	3	The need for synchronization frequency, time	Carrier synchronization Clock recovery	Class room lecture	
6	3	The need for synchronization frequency, time	Early late gate synchronization, Square low Costas loop	Class room lecture	
7	3	Intersymbol Interference Eye Diagram	ISI, Eye diagram generation, & Interpretation	Class room lecture	
8	3	ISI mitigation ZF Equalizer	Channel equalization basics, types, ZF equalizer design	Class room lecture	
9	3	MCM Modulation		Class room lecture	
10	3	OFDM	OFDM generation, CP, advantages and disadvantages, data	Class room lecture	

			rate, applications example		
11	3	OFDM	OFDM generation, CP, advantages and disadvantages, data rate, applications example	Class room lecture	
12	3	OFDM	OFDM generation, CP, advantages and disadvantages, data rate, applications example	Class room lecture	
13	3	Spread Spectrum systems	Introduction to Spread spectrum systems, PN sequence generation DS-SS system, antijam capability, Bandwidth, Process gain Frequency Hopped Spread Spectrum	Class room lecture	
14	3	Spread Spectrum systems	Introduction to Spread spectrum systems, PN sequence generation DS-SS system, antijam capability, Bandwidth, Process gain Frequency Hopped Spread Spectrum	Class room lecture	
15	3	Spread Spectrum systems	Introduction to Spread spectrum systems, PN sequence generation DS-SS system, antijam capability, Bandwidth, Process gain Frequency Hopped Spread Spectrum	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...).	John G. Proakis and Masoud Salehi "Digital Communications"
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.