Academic Program Description Form

University Name: Diyala

Faculty/Institute: College of Engineering

Scientific Department: Communications Engineering

Academic or Professional Program Name: Bachelor

Final Certificate Name: bachelor of Science in Communications Engineering

Academic System: Course

Description Preparation Date: 6 – 7 – 2025

File Completion Date: 6 – 7 – 2025

Signature:

Head of Department Name:

Assit. Prof. Dr. Mohammed S. Saleh

Date: 6 – 7 – 2025

Signature:

Scientific Associate Name:

Prof. Dr. Jabbar Kasim Jabar

Date: 6 – 7 – 2025

The file is checked by: Assist Prof Dr. Salah W. Farhan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 6 – 7 – 2025

Signature:

Approval of the Dean

prof. Dr. Anees A. Khadom

1. Program Vision

The department going to develop the curriculum in line with modern scientific developments in the field of communications engineering in addition to completing all the special requirements of scientific laboratories in the department. We seek to improve the staffed of teaching by dispatching members of Department of postgraduate in both inside and outside the country, and configure the appropriate conditions for scientific research in order to get Degrees required to be a Department able to compete in its own right and marked with the corresponding sections only local of which or the Arab and international Our ambitions We aspire to open graduate studies for a master's certificate in the disciplines of engineering various communication to be Department of scientific expertise to attract local and international center of which to open the horizons of cooperation through conferences, consulting, training, scientific research and development through broad and orderly opening to the community.

2. Program Mission

Expanding educational base and their applications in modern field of telematics and communications across both the international network and devices and cellular all advanced communication systems form that meets the need of institutions, both belonging to the state or the private sector through education, training and rehabilitation input from Human Resources (students) and make them able to deal with modern techniques and working in different institutions efficiently and effectively serve our dear country march.

3. Program Objectives

Teach students studying in the department on techniques required in all areas of modern communication systems and their applications in scientific and field state departments. Qualify graduates capable of working in government departments and the private sector engineering staff specialist efficiently and effectively. Contribute to provide an advanced level of related activities and the realization of the institutions experience and lead to the fulfillment of their need of human resources in order to achieve their success and the evolution and continuation.

4. Program Accreditation

None

5. Other external influences

None

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution requirements	5	6	4.24%	
College requirements	9	20	14.20%	
Department requirements	46	115	81.56%	
Summer Training				Graduation Requirements
Others				

7. Program Description

Course Name	Course Code	Level/Year	Credit Hours Practical	Credit Hours Theory
Democracy & human Rights	U 101	Second - First	-	2
Workshop skills	COE 107	Second - First	3	-
Computer skills	U 103	First - First	3	1
English Language	U 104	First - First	-	2
Engineering Drawing	COE 106	First - First	3	-
Mathematics -I	E 101	First - First	-	4
Mathematics -II	E 102	Second - First	-	4
Electronic Physics	COE 104	Second - First	-	4
C++ Programming	COE 105	Second - First	3	1
Digital Techniques	COE103	First - First	2	4
Electrical Engineering Fundamentals I	COE 101	First - First	2	6
Electrical Engineering Fundamentals II	COE102	Second - First	2	6
Arabic Language	U 108	Second - First	-	2
Signals and systems	COE 201	First - Second	2	3
Applied mathematics I	COE 202	First -Second	-	3
Electrical circuits	COE 203	First - Second	2	4
Electronic I	COE 204	First - Second	2	3
MatLab Programming	COE 205	First - Second	2	2

Course	Code	Semester - Year	Practical	Theory
Electromagnetic fields I	**COE 206**	First - Second	-	3
Analog communication	**COE 207**	Second- Second	2	3
Applied Mathematics II	**COE 208**	Second- Second	-	3
Electronic II	**COE 209**	Second- Second	2	3
Probability and random processing	**COE 210**	Second -Second	-	5
Electromagnetic fields II	**COE 211**	Second -Second	-	3
Computer 2	**UD23**	Second -Second	2	1
English Language 2	UD21	Second -Second	-	2
Arabic Language 2	UD22	Second -Second	-	2
Ba'ath Regime Crimes in Iraq	UD24	First -Second	-	2
Engineering Economy	**E301**	First - Third	-	2
Engineering Analysis	**COE301**	First - Third	-	2
Digital Communication I	**COE302**	First - Third	2	3
Antenna Theory and Design	**COE303**	First - Third	2	3
Digital Signal Processing	**COE304**	First - Third	2	3
Microcontroller and DSP Systems	**COE305**	First - Third	2	2
Communication Electronics -I	**COE306**	First - Third	2	3
Optical Communication Systems	**COE307**	First - Third	-	2
Detection and Estimation Theory	**COE308**	Second -Third	-	3
Digital Communication II	**COE309**	Second -Third	2	3
Image Processing	**COE310**	Second -Third	2	2
Information Theory	**COE311**	Second -Third	-	3
Radar Systems	**COE312**	Second -Third	2	2
Computer Networks	**COE313**	Second -Third	2	2
Waves Propagation	**COE314**	Second -Third	-	2
Communication Electronics -II	**COE315**	Second -Third	2	2
Engineering Profession Ethics	**E401**	First - Fourth	-	1
Graduation Project	**E402**	Fourth	8	-
Microwave Engineering-I	**COE401**	First - Fourth	2	3
Modern Communication Systems	**COE402**	First - Fourth	-	3
Cellular Mobile Networks	**COE403**	First - Fourth	-	2
Cryptography for Communication Systems	**COE404**	First - Fourth	-	2
Satellite Communication Systems	**COE405**	First - Fourth	-	2
Microwave Engineering-II	**COE406**	Second - Fourth	2	3
Global Positioning Systems	**COE407**	Second - Fourth	-	2
Multimedia Communication	**COE408**	Second - Fourth	-	2
Telecom Switching Systems	**COE409**	Second - Fourth	-	2
Television and Broadcasting Systems	**COE410**	Second - Fourth	-	2

8. Expected learning outcomes of the program

Knowledge

A. Cognitive goals

A1. - Understanding and teaching the student the principles of how signal work and how to deal with communication algorithms.

A2- Enabling students to obtain knowledge and understanding in working on and designing signal and system .

A3- The student understands the methods of forming signal and system parts and their interconnection.

A4- Enabling students to obtain knowledge and understanding of designing everything related to optical signal and system.

A5- Enabling students to obtain knowledge and understanding of diagnosing faults and maintaining various signal and system devices.

A6- The student understands the foundations of solving communication problems, cellular networks, and etc.

Skills

A. The skills goals special to the program.

B1 - Explanation of communication principles topics by specialists in the subject, with an emphasis on the use of mathematics as a basis for understanding and learning.

B2 - Providing them with skills to solve practical problems related to various communication systems and algorithms for addressing and solving technical problems in various fields of Communication engineering.

B3 – Obtaining experience to explore and develop communication systems and its algorithms.

Ethics

A. Affective and value goals

C1- Enabling students to think and analyze topics related to the engineering framework, such as various logical circuits.

C2- Enabling students to think and analyze topics related to Communication systems related to the engineering framework.

C3- Enabling students to think and analyze topics related to solving practical problems.

9. Teaching and Learning Strategies

☐ Providing students with the basics, additional topics, and field experiences related to the outcomes of thinking and analysis.

☐ Forming discussion circles during or outside lectures to discuss scientific engineering topics that require thinking and analysis.

☐ Asking students a set of thinking questions during lectures, such as (what, how,

when, why) for specific topics.

10. Evaluation methods

☐ Daily exams with practical and scientific questions.
☐ Participation marks for difficult competition questions among students.
☐ Assigning grades to homework assignments and reports assigned to them.
☐ Semester exams for the curriculum in addition to the final exam.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Electronic & communications	Communications			1	
Assist. Prof.	Communications	Communications techniques			1	
Assist. Prof.	Electronic & communications	Communications			3	
Assist. Prof.	Electric Eng.	Electronic & communications			3	
Assist. Prof.	Physics	Electro=optics			1	
Assist. Prof.	Physics	Nano technology			1	
Assist. Prof.	Communications	Communications			1	
Assist. Prof.	Info. & Comm. Eng.	Image processing			1	
Assist. Prof.	Elect. & Electronic Eng.	Communications				1
Assist. Prof.	Electro-optics and laser	Optoelectronics			1	
Lecturer	Elect. & Electronic Eng.	Electronics			1	1
Lecturer	Communications	Communications			1	1

Assist. Lecturer	Communications	Communications			3	
Assist. Lecturer	Elect. & Electronic Eng.	Electronics			1	
Assist. Lecturer	Electronic & communications	Communications			2	
Assist. Lecturer	Electric Eng.	Electronic & communications			1	

Professional Development

Mentoring new faculty members

Faculty members are instructed to hold regular meetings and review questionnaires received from students with the Scientific Committee.

Professional development of faculty members

The teaching staff undergoes development through training, workshops, and seminars. Progress is evaluated by subject performance.

12. Acceptance Criterion

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

13. The most important sources of information about the program

- College website.
- The department's website and contact the department by email.

14. Program Development Plan

- The courses are updated annually to keep up with developments of the world.
- The laboratories are also updated under academic curricula.
- Additionally, postgraduate programs are now being offered.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	**Course Code**	**Course Name**	**Basic or optional**	Knowledge				Skills				Ethics			
				A1	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**
Fourth/second semester	**COE408**	Multimedia communication	Basic	√	√	√	√	√	√	√		√	√	√	

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:
Multimedia Communication

2. Course Code:
COE408

3. Semester / Year:
Second/forth

4. Description Preparation Date:
24-4-2024

5. Available Attendance Forms:
None

6. Number of Credit Hours (Total) / Number of Units (Total)
30h

7. Course administrator's name (mention all, if more than one name)
Name: Asisst. Prof. Haraa Raheem Hatem Email: Haraa_altaie_eng@uodiyala.edu.iq

8. Course Objectives	
Course Objectives	..... In this course, students will learn: ● Familiarity with important programs in the field of image compression. ● Learn and understand the equations for testing the proficiency of images ● Exploring the differences between the media and their uses The differences between lossy and lossless compression

9. Teaching and Learning Strategies	
Strategy	**In this course, students are guided by:** • **Using different examples.** • **Using different styles of discussion that aim to connect the theoretical and practical sides.** • **Asking questions and giving exercises that require analysis and conclusions related to lectures.** • **Encourage students to participate in discussions and do the practical work.** **Encourage students to work in groups.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1st	2	Overview of Multimedia Services	Overview of Multimedia Processing & Coding	Lecture PDF power point Video	Daily exams + monthly exams
2nd	2	Overview of Multimedia applications	Overview of Multimedia Processing & Coding	Lecture PDF power point Video	Daily exams + monthly exams
3rd	2	Media types	Overview of Multimedia Processing & Coding	Lecture PDF power point Video	Daily exams + monthly exams
4th	2	Image File Formats	Overview of Multimedia Processing & Coding	Lecture PDF power point Video	Daily exams + monthly exams
5th	2	Calculation of MSE &PSNR	Quality Measures in Image Coding	Lecture PDF power point Video	Daily exams + monthly exams
6th	2	LOSSLESS COMPRESSION METHODS	Digital Image Compression	Lecture PDF power point Video	Daily exams + monthly exams
7th	2	Huffman coding	Digital Image Compression	Lecture PDF power point Video	Daily exams + monthly exams

8th	2	**Arithmetic Coding**	Digital Image Compression	Lecture PDF power point Video	Daily exams + monthly exams
9th	2	Transform Coding	LOSSY COMPRESSION SCHEMES	Lecture PDF power point Video	Daily exams + monthly exams
10th	2	Predictive Coding	LOSSY COMPRESSION SCHEMES	Lecture PDF power point Video	Daily exams + monthly exams
11th	2	**Discrete Fourier Transform (DFT)**	Types of Transform Coding	Lecture PDF power point Video	Daily exams + monthly exams
12th	2	**Discrete Cosine Transform (DCT)**	Types of Transform Coding	Lecture PDF power point Video	Daily exams + monthly exams
13th	2	**Karhunen-Loeve Transform (KLT)**	Types of Transform Coding	Lecture PDF power point Video	Daily exams + monthly exams
14th	2	**Walsh-Hadamard Transform (WHT)**	Types of Transform Coding	Lecture PDF power point Video	Daily exams + monthly exams

15th	2	seminar	12		

				13		

11. Course Evaluation

Distributing the score out of 100 according to Exams (hour monthly exam 15%, three hours final exam 60%). Reports and seminars 15%,, H.W and class activities 10%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Image processing and applications. 2005
Main references (sources)	
Recommended books and references (scientific journals, reports…)	**All websites that specialize in multimedia**
Electronic References, Websites	