Course Description Form

1. Course Name:
Operation Research
2. Course Code:
CE 4202
3. Semester / Year:
2 / 2023-2024
4. Description Preparation Date:
6/4/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
٤٥ hours / 30 units
7. Course administrator's name (mention all, if more than one name)
Name: Israa Hadi Hasan Email: israa.h.hasan@uotechnology.edu.iq
8. Course Objectives

Course Objectives	The main objective of studying Operations Research is to introduce the student to the methodology of Operations Research and its methods and uses in the administrative and military fields in general and to build the student's administrative capacity to address problems in the work environment and to take optimal solution decisions about them in particular. Where the problem is transformed into a mathematical model within linear or linear models. Transportation models and other analytical techniques used in solving problems that help him make the appropriate decision within different environments.
9. Teaching and Learning Strategies	
Strategy	1. Lectures 2. Exercises 3. Homework 4. Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	History of operations research, Applications, Modeling the linear programming	Introduction to operation research	Lectures, Tutorials	Quiz + Exam + HW
2	3	formulate a problem and transform it into a mathematical model	Introduction to operation research	Lectures, Tutorials	Quiz + Exam + HW
3	3	-Linear programming Graphical method - various examples of linear programming problems	Solving the linear programming,	Lectures, Tutorials	Quiz + Exam + HW

4	3	Algorithm of the simplex method	Simplex method	Lectures, Tutorials	Quiz + Exam + HW
5	3	Two-phase method. examples	algorithms for linear programming	Lectures, Tutorials	Quiz + Exam + HW
6	3	Dual simplex method	Duality	Lectures, Tutorials	Quiz + Exam + HW
7	3	Dual problem. examples	Dual theory	Lectures, Tutorials	Quiz + Exam + HW
8	3	Sensitivity analysis or post-optimization	Sensitivity analysis	Lectures, Tutorials	Quiz + Exam + HW
9	3	The effect of optimality	Sensitivity analysis	Lectures, Tutorials	Quiz + Exam + HW
10	3	Integer programming problem	Integer programming problem	Lectures, Tutorials	Quiz + Exam + HW
11	3	Fractional programming	Nonlinear programming	Lectures, Tutorials	Quiz + Exam + HW
12	3	Transportation problems, the general form of the problem, basic definitions	Transportation Model	Lectures, Tutorials	Quiz + Exam + HW
13	3	Methods for solving transportation problems North-West corner method	Methods for solving Transportation Problems	Lectures, Tutorials	Quiz + Exam + HW
14	3	Least-cost method with examples	Least-cost method	Lectures, Tutorials	Quiz + Exam + HW
15	3	Optimal solution of Transportation problem	Optimal solution of Transportation problem	Lectures, Tutorials	Quiz + Exam + HW

11.Course Evaluation

Term Exam	Quizzes + HW	Final Exam
As(30%)	As(10%)	As(60%)

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Operations Research: Applications and Algorithms, Fourth Edition, by Wayne L. Winston
Main references (sources)	Operations Research Second addition Principles and Applications, G.Srinivasan 2010
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	N/A

Course Description Form

1. Course Name:
Mobile Communication Systems II
2. Course Code:
CEM 4203
3. Semester / Year:
Second Semester/ fourth Year
4. Description Preparation Date:
1/2/2024
5. Available Attendance Forms:
Face-to-face class attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Jamal Mohammed Rasool Email: 30189@uotechnology.edu.iq
8. Course Objectives

Course Objectives	• To gain knowledge about signal processing techniques as applied to signals and systems. • Understanding the principles and technologies of wireless communications and mobile phones. • Understand how these systems work and design. • A recent study in this field and its analysis of communications technology.

9. Teaching and Learning Strategies

Strategy	• Lecture presentation • Tutorials • Experimental learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**4**	**Personal Communication Systems (PCS)**	An introduction to PCM. PCS Architecture. Medium Access Techniques,	Le	**Examinations, Homework, and Reports**
2	**4**		GSM Overview. Packet Switched Data.		

3	**4**		2.5/3G Mobile Wireless Systems. GPRS, EDGE Systems.		
4	**4**		WCDMA & CDMA 2000 Systems.		
5	**4**	Wireless Local Area Networks (WLAN)	An introduction to WLAN. IEEE 802.11, System Architecture and Protocol Architecture of IEEE 802.11. HIPERLAN Architecture,		
6	**4**		Bluetooth Networks, Mobile Internet Protocol.		
7	**4**		IP Packet Delivery. Tunneling and Encapsulation.		
8	**4**		ReverseTunneling. IPv6.		
9	**4**	Wireless Application Protocol (WAP)	Networks for WAP. WAP Layered Architecture and Protocol Stack.		
10	**4**		WAP Gateways. Wireless Markup Language (WML).		
11	**4**		Programming in WML. WML Script.		
12	**4**		Voice over Internet Protocol and Convergence Technologies.		
13	**4**	Wireless Local Loop Technologies (WLL)	WLL Architecture Model. Mobile AD HOC Networks. AD HOC Routing Protocols.		
14	**4**		DSDV, DSR and AODV Routing Techniques.		
15	**4**		Quality of service in Mobile Ad hoc		

11. Course Evaluation

1. Classroom activity: 2 Marks 2. Quizzes: 5 Marks 3. Homework: 3 Marks
4. Midterm: 30 Marks 5. Final exam: 60 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-
Main references (sources)	1. Wireless and Mobile Networks Architectures, Yi-Bing and I. Chlamtac, JohnWiley & Sons, 2001. 2. Simulation and Software Radio for Mobile Communications, H. Harada, Universal Personal Communications. 3. Fundamentals of Wireless Communication, Tse and Viswanath, Cambridge University Press.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	-

Course Description Form

1. Course Name: Digital Signal Processing II

2. Course Code: CE 4206

3. Semester / Year: Semester

4. Description Preparation Date: 18/3/2024

5. Available Attendance Forms: Attending

6. Number of Credit Hours (Total) / Number of Units (Total): 3 / 2

7. Course administrator's name (mention all, if more than one name)

Name: Shayma Wail Nourildean
Email: shayma.w.nourildean@uotechnology.edu.iq

8. Course Objectives

Course Objectives	• **To teach the student the Transform domain analysis of LTI systems.** • **To teach the student the Filter structure and realization.** • **To teach the student the FIR filter design.** • **To teach the student the IIR filter design.**

9. Teaching and Learning Strategies

Strategy	• Lecture method: By clarifying and explaining subjects that are difficult for the student to understand such as proves the laws, • Discussion Allow the student to participate in the group dialogue. • Tutorial: By giving the students examples to clarify various problems. • Practical presentations by using the video to present the lesson, and this method contributes to make the student master the lesson quickly and the consolidation of information in the mind of the student.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The ability to understand Impulse response, frequency response and transfer function	Transform domain analysis of LTI systems	Lectures	Quiz+ Exam+ H.W.
2	3	The ability to understand LTI systems with rational transfer functions: difference equations, stability and causality, inverse systems	Transform domain analysis of LTI systems	Lectures	Quiz+ Exam+ H.W.
3	3	The ability to understand Frequency response versus pole-zero plot, Classification of LTI systems: real-valued transfer functions,	Transform domain analysis of LTI systems	Lectures	Quiz+ Exam+ H.W.
4	3	The ability to understand allpass systems, minimum phase systems, systems with generalized linear-phase, FIR/IIR systems	Transform domain analysis of LTI systems	Lectures	Quiz+ Exam+ H.W.
5	3	The ability to understand Direct-form, lattice, and cascade structures for FIR filters.	Filter structure and realization	Lectures	Quiz+ Exam+ H.W.
6	3	The ability to understand Direct-form, for IIR filters.	Filter structure and realization	Lectures	Quiz+ Exam+ H.W.
7	3	The ability to understand lattice, and cascade structures for IIR filters.	Filter structure and realization	Lectures	Quiz+ Exam+ H.W.

8	3	Developing skills in Filter structure and realization of FIR using Window design	FIR filter design	Lectures	Quiz+ Exam+ H.W.
9	3	Developing skills in Filter structure and realization of FIR filters using Frequency sampling design	FIR filter design	Lectures	Quiz+ Exam+ H.W.
10	3	Developing skills in Filter structure and realization of FIR using Chebyshev approximation	FIR filter design	Lectures	Quiz+ Exam+ H.W.
11	3	Developing skills in Filter structure and realization of FIR using Chebyshev approximation	FIR filter design	Lectures	Quiz+ Exam+ H.W.
12	3	Studying Characteristics of commonly used analog filters: Butterworth, Chebyshev.	IIR filter design	Lectures	Quiz+ Exam+ H.W.
13	3	Studying Elliptic, Pole-zero inplacement	IIR filter design	Lectures	Quiz+ Exam+ H.W.
14	3	Studying Impulse invariant design.	IIR filter design	Lectures	Quiz+ Exam+ H.W.
15	3	Studying Bilinear design	IIR filter design	Lectures	Quiz+ Exam+ H.W.

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- -Pall A. Lynn, Digital signal processing with Computer applications, 2nd edition, 1998. 2-Emmanuel C. Ifeachor, Digital Signal Processing, 1993.
Main references (sources)	Digital Signal Processing Fundamentals and Applications, Li Tan and Jean Jiang, second edition

Recommended books and references (scientific journals, reports…)	3- Advanced Engineering Mathematics, by O'Neil 4- Robert J. Schilling and Sandra L. Harris, Digital Signal Processing Using MATLAB, 3rd Edition, 2015. 5-Joan C. Proakis and Dimitris G. Manolakis, Digital Signal Processing: Principles, Algorithms and Applications.
Electronic References, Websites	Lecture Notes and videos.

Course Description Form

1. Course Name:

Computer Networks

2. Course Code:

CEM 4207

3. Semester / Year:

second Semester/ Fourth Year

4. Description Preparation Date:

1/2/2024

5. Available Attendance Forms:

Face-to-face class attendance

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

2/2

7. Course administrator's name (mention all, if more than one name)

Name: Dr. thamer Mohammed jamel
Email: **thamer.m.jamel@uotechnology.edu.iq**

8. Course Objectives

Course Objectives	• The student is provided with a definition of data communication systems. • Give the student information related to networks (types and methods of formation) • Teach the student the laws of networks with an explanation of two examples of them and data routing protocols. • Give the student information related to circuit switching, data packet switching and network congestion control. • Teaching the student the architecture of a wired and wireless local area network space. • Give the student information related to network security

9. Teaching and Learning Strategies

Strategy	• Lecture presentation • Tutorials • Experimental learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	**4**	Introduction and Basic Concepts	Obtaining information related to communication systems and network types	Lectures	**Quick + Semester Exams**

3,4	**4**	Protocols and Architectures	Obtain information related to data routing protocols	Lectures	**Quick + Semester Exams**
5,6	**4**	Internetworking	Obtaining information related to Internet protocols (fourth and sixth editions)	Lectures	**Quick + Semester Exams**
7,8	**4**	Circuit Switching	Obtain information regarding circuit switching and beam switching.	Lectures	**Quick + Semester Exams**
9,10	**4**	Packet Switching	Develop skills in routing protocols.	Lectures	**Quick + Semester Exams**
11,12	**4**	Local Area Networks	Obtaining information related to a wired and wireless local area network	Lectures	**Quick + Semester Exams**
13,14,15	**6**	Network Security	Obtaining information related to network security	Lectures	**Quick + Semester Exams**

11. Course Evaluation

1. Classroom activity: 2 Marks 2. Quizzes: 5 Marks 3. Homework: 3 Marks
4. Midterm: 30 Marks 5. Final exam: 60 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-
Main references (sources)	1- William Stallings, Data and Computer communications. 2- Behrouz A. Forouzan, Data Communication and Networking. 3- Lecture Notes and videos
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	-