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 Year 2023-2024

University: Al-Kafeel
College : College of Technical Engineering
Number Of Departments In The College :1
Date Of Form Completion : 10 / 3 / 2024

Dean's Name	*Dean's Assistant For Scientific Affairs*	*The College Quality Assurance And University Performance Manager*
Date : / 03 / 2024	*Date : / 03 / 2024*	*Date : / 03 / 2024*
Signature	*Signature*	*Signature*

Quality Assurance And University Performance Manager : Lecturer Muhammad Zuhair Hassan

Date : / 03 / 2024

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	Al-Kafeel University
2. University Department/Centre	Computer Techniques Engineering
3. Programme Title	Computer Techniques
4. Title of Final Award	Bachelor of Computer Techniques Engineering
5. Modes of Attendance offered	Yearly
6. Accreditation	Accreditation Board for Engineering and Technology (ABET)
7. Other external influences	Beneficiary satisfaction, Match learning and educational outcomes with the job market, Community service by the department and the extent of student participation in it.
8. Date of production/revision of this specification	2024
9. Aims of the Programme	
A) Graduating engineering cadres in the field of computer engineering who are able to face all the difficulties and obstacles they face while working in the industrial and technological sectors by arming them with all the information, basics and secular facts that they need in their field of work in the field of computer engineering.	

b) Striving to graduate engineers with different specializations in computer technology engineering who have the ability to be creative and innovative in various fields of engineering work after their graduation and to keep pace with the scientific and technological development taking place in the civilized world.

c) Preparing technical and engineering cadres in the field of computer engineering to learn about the most important scientific and technological developments and seek to benefit from them in community service and to develop students' teamwork skills.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. Acquire knowledge, understanding, principles, theories and basics of computer engineering.

A2. Understand the advanced modern scientific topics in the field of computer engineering.

A3. Examine the most important computer programs that are used in the field of solving engineering problems.

A4. The ability to understand the basics of the work of laboratory equipment.

B. Subject-specific skills

B1. Description and analysis of computer applications.

B2. In books, prove and discuss engineering rules and the foundations based on them.

B 3. Analyzes and discusses problems and finds effective solutions to them with the possibility of using specialized computer programs.

B4. Justify, convey and prove concepts, especially engineering concepts in the field of computer engineering.

Teaching and Learning Methods

1- Theoretical lectures.

2- Discussion lectures.

3- Practical lectures in laboratories.

4- Scientific seminars by students.

5- Small educational group methods.

6- Graduation projects for completed stage students and their discussion.

Assessment methods

1- Monthly or quarterly written exams.
2- Quizzes.
3- Writing scientific reports.
4- Scientific seminars.
5- Home duties.
6- Graduation projects discussion committees for outgoing students.

C. Thinking Skills
C1. The learner is able to receive and accept information.
C2. Able to work in a team spirit.
C3. It develops a spirit of affection, sympathy and respect for oneself and others.
C4. He abides by the ethics of scientific research, the ethics of university institutions, and the ethics that stem from religion and social systems.

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific sources.

Assessment methods

Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories proposed.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Preparing engineering designs for computer parts and systems.
D2 - Providing engineering consultations on engineering problems and their solutions in the field of computer engineering.
D3- Analyzing, discussing and using the results of engineering tests in design and evaluation processes.
D4- The ability to write and formulate engineering technical reports on the results of examinations and secularization tests and the ability to derive the results and our effects from the test.

Teaching and Learning Methods

• Presentation of scientific lectures using electronic output devices: data show, smart boards, television screens.
• Homework and mini projects within the lectures.

• Scientific laboratories.
• Graduation projects.
• Scientific visits.
• Scientific courses and seminars held in the department.
• Summer training.

Assessment Methods

•Snap exams.
•Homework and mini-projects within the course.
•Quarterly and final exams for theoretical and practical subjects.
•Interaction within the lecture
• Reports theoretical and practical material.

11. Programme Structure

Level/Year	Course or Module Code	Course or Module Title	Credit rating	
			Practical	Theoretical
Second	2CTE1	Microprocessor Architecture	3	2
	2CTE2	Instrumentation and Measurements	2	2
	2CTE3	Communication Fundamentals	2	1T+2
	2CTE4	Electronics	2	2
	2CTE5	Computer Programming (II)	2	2
	2CTE6	Computer Applications	2	1
	2CTE7	Mathematics (II)	-	1T+2
	2CTE8	Training	Interpolation	

12. Awards and Credits

Bachelor Degree Requires (x) credits

Third **Electronics Branch**	3CTEE1	Control Engineering Fundamentals	2	2	
	3CTEE2	Engineering Analysis	2	2	
	3CTEE3	Power Electronics	2	2	
	3CTEE4	Real Time Systems Design	2	2	
	3CTEE5	Digital Controllers	2	2	
	3CTEE6	Digital Signal Processing	2	2	
	3CTEE7	Elective Course	2	2	
	3CTEE8	Electronic Systems Simulators	2	1	
	3CTEE9	Training	Interpolation		
Third **Communications Branch**	3CTEC1	Computer Networks Fundamentals	2	2	
	3CTEC2	Control Engineering Fundamentals	2	2	
	3CTEC3	Digital Communications	2	2	
	3CTEC4	Engineering Analysis	2	2	
	3CTEC5	Real Time Systems Design	2	2	
	3CTEC6	Digital Signal Processing	2	2	
	3CTEC7	Elective Course	2	2	
	3CTEC8	Computer Networks Simulators	2	1	
	3CTEC9	Training	Interpolation		

Fourth **Electronics Branch**	4CTEE1	Project Management	2	2	
	4CTEE2	Advanced Digital Electronics	2	2	
	4CTEE3	Computer Interface Circuits Design	2	2	
	4CTEE4	Advanced Computer Technology	2	2	
	4CTEE5	Computer Networks	2	2	
	4CTEE6	Smart Systems Modeling	2	2	
	4CTEE7	Elective Course	2	2	
	4CTEE8	Project	4	-	
Fourth **Communications Branch**	4CTEC1	Project Management	2	2	
	4CTEC2	Security of Computer and Networks	2	2	
	4CTEC3	Mobile Communications	2	2	
	4CTEC4	Computer Networks Protocols	2	2	
	4CTEC5	Multimedia Computing	2	2	
	4CTEC6	Information Theory and Coding	2	2	
	4CTEC7	Elective course	2	2	
	4CTEC8	Project	4	-	

12. Personal Development Planning

1. The students began to spread a culture of self-confidence and the ability to successfully skip the program if they loved the program and were keen to master it, and cooperated with each other and with the trainers.
2. Spreading a culture that the student's saying I did not understand is better than his silence on the lack of understanding, because the program is a series of interconnected tasks, each of which is a requirement for the next one, which means that any disruption means that the student stops throughout the year.
3. Adopting training and homework by installing the relevant programs on personal computers at home and allowing those who do not have a computer to visit the laboratory during their spare time, given the presence of the researcher's assistant daily inside the laboratory.
4. The gradual transformation of self-reliance in learning the program.
5. Enabling the student to manage the graduation research by himself through research procedures and experimental methods, and to retain those skills after graduation.

13. Admission criteria .

First: College admission requirements:

1. Adopting the admission requirements for students according to the regulations of the Ministry of Higher Education and Scientific Research (Central National Admission).
2. He must successfully pass any special test or personal interview deemed by the college or university council.
3. To pass the medical examination.

Second: Conditions for admission to the scientific department:

1. Choosing the student's desire from more than one desire, in order of preference.
2. The acceptance rate in high school.
3. The absorptive capacity of the scientific department.

14. Bachelor Degree Requires (x) credits. Key sources of information about the program
1- Market needs. 2- Local trends. 3- Studies and questionnaires. 4- Specialized seminars and workshops with the beneficiaries.

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.

The second Stage

1. Teaching Institution	AlKafeel University
2. University Department/Centre	Computer technics engineering
3. Course title/code	Computer Networks Fundamentals /3CTEE1
4. Programme (s) to which it contributes	BSC
5. Modes of Attendance offered	Fulltime
6. Semester/Year	Annually
7. Number of hours tuition (total)	120 h
8. Date of production/revision of this specification	30/5/2021

9. Aims of the Course
Giving the student information on the basic concepts of linear control theory, analysis and design of linear control systems.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1- Distinguish between open and closed loop control systems and their physical meaning. A2- Describe the characteristics of a linear control system. A3- Uses methods of mathematical representation of physical systems by means of a transformation function. A4- Analyze the behavior and equilibrium of the control system and systems in the frequency range. A5- Design linear control systems.
B- Subject-specific skills B1- Defines the engineering problem and its solution. B2- Apply the concepts of engineering analysis and design. B3 - Analyze and interpret the results. B4 - Uses laws and rules optimally.
Teaching and Learning Methods
1- Theoretical presentation of the curriculum vocabulary through the use of some general engineering principles, which lead to the analysis and design of the engineering problem, in addition to using the laws and rules of control engineering. (Get A1-A5 from Paragraph 9) 2- Class group discussions of practical examples of control systems. (Get A1 from Paragraph 9) 3- Laboratory application of the curriculum vocabulary using computer programs to represent and analyze systems, such as the Matlab program (obtaining B1-B4 from paragraph 9)
Assessment methods
1- Theoretical presentation of the curriculum vocabulary through the use of some general engineering principles, which lead to the analysis and design of the

engineering problem, in addition to using the laws and rules of control engineering. (Get A1-A5 from Paragraph 9)
2- Class group discussions of practical examples of control systems. (Get A1 from Paragraph 9)
3- Laboratory application of the curriculum vocabulary using computer programs to represent and analyze systems, such as the Matlab program (obtaining B1-B4 from paragraph 9)

C. Thinking Skills

1- An achievement test and home and class assignments to know the student's knowledge base to verify A2-A5 of paragraph 9.
2- The discussion test to verify A1 of paragraph 9.
3- Laboratory test to verify B1-B4 of paragraph 9.

Teaching and Learning Methods

To reach C1-C2 of Paragraph 9, the student is assigned to address a practical engineering problem related to control engineering, and during his study period, he presents appropriate solutions to analyze the origin of the problem, follow the theories and rules used to solve it, and present the results of the analysis and solutions and its economic and social impact.
A1- He understands the requirements of the engineering profession and ethical responsibility in addition to the need for lifelong learning and the ability to engage in it.
B2- Understand the impact of engineering solutions on economic activities.

Assessment methods

C1 - C2 The results are presented in class to be discussed and the rest of the students participate in the discussion.

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

D1- Building ideas and communicating them effectively orally and in writing.

D2 - Time management and work within deadlines.

D3 - Participate constructively in groups.

D 4- Searching for information and using information technology.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	8	The student should be able to understand control systems and methods of representing and analyzing them.	Introduction To Control Systems, Open And Closed Loop System.	A theoretical presentation using illustrative diagrams and some general engineering principles	achievement test + class assignment
3-6	8		Mathematical modeling of physical systems and Transfer Functions, Mathematical Modeling of D.C. Servo Motor.	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
7-8	8		Block diagrams.	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
9-10	8		Time-domain analysis of closed loop control systems and error analysis	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment

10-12	8	A theoretical presentation using the laws and rules of control engineering.	P, PI, PD and PID Modes of Feedback Control, Realization of PID Controller Using Active and Passive Elements.	The student should be able to understand the impact of the work of the controllers on the control systems.	achievement test + class assignment
13-14	8		Stability analysis and Rouths stability Criterion	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
15-17	12	Theoretical presentation using the schemes, rules and laws of control engineering	Root Locus Technique.		achievement test + class assignment
18-20	12	Theoretical presentation using the schemes, rules and laws of control engineering	Analysis of control system in frequency domain and Bode Diagrams	The student should be able to analyze the balance of control systems and the ability to analyze the performance of the system in the time and frequency range. And that the student is able to design the control system.	achievement test + class assignment

21	4	Theoretical presentation using the schemes, rules and laws of control engineering	Design of control systems and Compensation concepts.		achievement test + class assignment
22-25	16	Theoretical presentation using the schemes, rules and laws of control engineering	Control system design using root locus method.	The student should be able to analyze the balance of control systems and the ability to analyze the performance of the system in the time and frequency range. And that the student is able to design the control system.	achievement test + class assignment
26-30	16	Theoretical presentation using the schemes, rules and laws of control engineering	Control system design using Bode Diagrams.		achievement test + class assignment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] K. Ogata, "Modern Control Theory Engineering", 4th Edition 1. R.C. Dorf & R.H. Bishop: "Modern Control Systems", 10th Edition, Prentice Hall, 2005. 2. C. Phillips & R. Harbor: "Feedback Control Systems", Prentice-Hall, 1996.

	3. Franklin, Powell & Emami-Naeini: "Feedback Control of Dynamic Systems", Addison-Wesley, 1993.
Special requirements (include for example workshops, periodicals, IT software, websites)	Matlab
Community-based facilities (include for example, guest Lectures , internship , field studies)	A number of electronic references and a number of specialized websites.

13. Admissions	
Pre-requisites	annual system
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel University
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Computer Networks Simulators/ 3CTEC8
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
Giving the student information about the basic concepts in simulating the work of computer networks, through the use of different programs that simulate computer networks and building virtual networks that simulate reality	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods.
A- Knowledge and Understanding A1- Familiarity with the theoretical concepts of computer networks A2- Mastering the use of network simulation programs and identifying the features and characteristics of the different types of them A3- Assisting in building a virtual model of the network and studying it from different aspects before applying it on the ground A4- Identify the most important software used to manage and organize the work of the network A5- Study and analyze the most important factors that affect the work of the network
B. Subject-specific skills B1 - The student acquires the skill of using simulation programs B2 - The student acquires the skill of applying simulation programs in the field of networks B3 - The student acquires a skill in maintaining computer networks using simulation programs. B4- The student acquires the skill of using the best simulators and an overview of their concept and usefulness.

Teaching and Learning Methods
The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.
Assessment methods
Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.
C. Thinking Skills C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science. C2. Learn interaction during the class. C3. Learn how to love the science and make the most use of it. C4. Learn how to love the research and pick up the useful information from a trusted resource.
Teaching and Learning Methods
Given theoretical and practical lectures based on different and robust resources.
Assessment methods
Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hour	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st 2 3 4 5 6 7	21	Introduction to Network Emulators Comparison between Simulator Emulator Benefits and limitations Emulators Simulator as a technique and engineering tool for analysis and planning accidents Time dependent techniques Use of measurement data	**Introduction to Networks Simulation** • Introduction • Simulator vs Emulator • Why Simulation? • Benefits and limitations of simulations • Simulation techniques as an engineering tool for analyzing, planning, dimensioning, monitoring, and building real operating networks. • Event driven vs Time driven simulation techniques • The use of measurement data and configuration data from real networks in simulation.	Lecture and lab	exams and quizzes
8 9 10 11	12	Networking basics Network Terminology	**Networking Basics** • Networking terminology	Lecture and lab	exams and quizzes

		Toplogu natural and logical Network architecture and protocols Network Layer Models (OSI, TCP/IP) Network Elements (HUB, SWITCH, ROUTERS) Network programming addresses Hosts have an IP protocol Path of addresses through the network and access to the network	• Common physical and logical topologies. • Networking architectures and protocols, network connections, and the Open Systems Interconnection (OSI) model. • Network Elements (HUBs, SWITCHs (L2, L3), ROUTERs, etc..)		
12 13 14	9	addresses IP V6 Signal distribution types and their operation (MULTICAST, BROIGCAST, ANYCAST)	**Network Implementation with simulation** • Understanding IP addressing, assigning IP addresses, mapping logical host names to IP addresses, routing, and accessing the Internet. • Why IPv6 is necessary and how multicasting works.	Lecture and lab	exams and quizzes

			• Implementing Routing techniques (static and dynamic).		
15 16	6	Network management remote network management Network Analysis Tools Grids and items	**Network Management** • Remote management. • Network monitoring tools, and elements to optimize the performance of the network (Solar winds, PRTG, etc..).	Lecture and lab	exams and quizzes
17 18 19	9	Network Analysis Tools	**Troubleshooting** • Systematic methodology for troubleshooting. • Tools to troubleshoot network connectivity problems, and commands to gather network information and troubleshoot IP configuration problems. • Troubleshooting name resolution, switching and routing problems.	Lecture and lab	exams and quizzes

20 21 22 23 24 25 26 27 28	27	Error detection Troubleshooting tools Item links and arrange addresses IP	**Modeling Networks** • Introduction to system models. • **Event Probability** - events, axioms of probability, conditional probability, independence, and Bayes theorem. • **Discrete Probability Models** - random variables, expected values, cumulative distribution, Bernoulli trials; binomial, Poisson and geometric distributions. • **Continuous Probability Models** - density function; uniform, exponential and normal distributions; central limit theorem, confidence bounds. • **Basic Queueing Models** - arrival processes, Little's Law, classification, M/G/1, M/D/1 and	Lecture and lab	exams and quizzes

			M/M/1, occupancy and delay, closed-loop model. • **Introduction to Discrete-Event Simulation** - random numbers, event-oriented time advance, state machines, object-oriented java applications. • **Statistical Estimation** - point estimation and confidence intervals. • **Computer and Network Performance Models** - modeling and analysis of systems used to illustrate the various topics.		
29 **30**	6		**Verification and Validation of Simulation Models** • Model Building, Verification, and Validation • Verification of Simulation Models • Calibration and Validation of Models	Lecture and lab	exams and quizzes

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	][1] Behrouz ,A. Forouzan “Data communications and networking” 4th edition. [2] Theoddore. S. Rappaport ,”wireless communications “ 2nd edition. [3] Vijay Garg ,”wireless communications and networking “. [4] Teerawat Issariyakul , and Ekram Hossain “introduction to network simulator NS2”,2nd edition. [5] Gassan A. Abed ,”introduction to network simulation using NS-2”.
Special requirements (include for example workshops, periodicals, IT software, websites)	Many of electronic references and a some of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	AlKafeel University

2. University Department/Centre	Computer technics engineering
3. Course title/code	Control Engineering Fundamentals/3CTEC2
4. Programme (s) to which it contributes	BSC
5. Modes of Attendance offered	Fulltime
6. Semester/Year	Annually
7. Number of hours tuition (total)	120 h
8. Date of production/revision of this specification	30/5/2021
9. Aims of the Course	
Giving the student information on the basic concepts of linear control theory, analysis and design of linear control systems.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1- Distinguish between open and closed loop control systems and their physical meaning. A2- Describe the characteristics of a linear control system. A3- Uses methods of mathematical representation of physical systems by means of a transformation function. A4- Analyze the behavior and equilibrium of the control system and systems in the frequency range. A5- Design linear control systems.
B- Subject-specific skills B1- Defines the engineering problem and its solution. B2- Apply the concepts of engineering analysis and design. B3 - Analyze and interpret the results. B4 - Uses laws and rules optimally.
Teaching and Learning Methods
1- Theoretical presentation of the curriculum vocabulary through the use of some general engineering principles, which lead to the analysis and design of the engineering problem, in addition to using the laws and rules of control engineering. (Get A1-A5 from Paragraph 9)

2- Class group discussions of practical examples of control systems. (Get A1 from Paragraph 9)
3- Laboratory application of the curriculum vocabulary using computer programs to represent and analyze systems, such as the Matlab program (obtaining B1-B4 from paragraph 9)

Assessment methods

1- Theoretical presentation of the curriculum vocabulary through the use of some general engineering principles, which lead to the analysis and design of the engineering problem, in addition to using the laws and rules of control engineering. (Get A1-A5 from Paragraph 9)
2- Class group discussions of practical examples of control systems. (Get A1 from Paragraph 9)
3- Laboratory application of the curriculum vocabulary using computer programs to represent and analyze systems, such as the Matlab program (obtaining B1-B4 from paragraph 9)

C. Thinking Skills

1- An achievement test and home and class assignments to know the student's knowledge base to verify A2-A5 of paragraph 9.
2- The discussion test to verify A1 of paragraph 9.
3- Laboratory test to verify B1-B4 of paragraph 9.

Teaching and Learning Methods

To reach C1-C2 of Paragraph 9, the student is assigned to address a practical engineering problem related to control engineering, and during his study period, he presents appropriate solutions to analyze the origin of the problem, follow the theories and rules used to solve it, and present the results of the analysis and solutions and its economic and social impact.

A1- He understands the requirements of the engineering profession and ethical responsibility in addition to the need for lifelong learning and the ability to engage in it.

B2- Understand the impact of engineering solutions on economic activities.
Assessment methods
C1 - C2 The results are presented in class to be discussed and the rest of the students participate in the discussion.

D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Building ideas and communicating them effectively orally and in writing. D2 - Time management and work within deadlines. D3 - Participate constructively in groups. D 4- Searching for information and using information technology.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	8	The student should be able to understand control systems and methods of representing and analyzing them.	Introduction To Control Systems, Open And Closed Loop System.	A theoretical presentation using illustrative diagrams and some general engineering principles	achievement test + class assignment
3-6	8		Mathematical modeling of physical systems and Transfer Functions, Mathematical Modeling of D.C. Servo Motor.	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
7-8	8		Block diagrams.	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
9-10	8		Time-domain analysis of closed loop control systems and error analysis	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment

10-12	8	A theoretical presentation using the laws and rules of control engineering.	P, PI, PD and PID Modes of Feedback Control, Realization of PID Controller Using Active and Passive Elements.	The student should be able to understand the impact of the work of the controllers on the control systems.	achievement test + class assignment
13-14	8		Stability analysis and Rouths stability Criterion	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
15-17	12	Theoretical presentation using the schemes, rules and laws of control engineering	Root Locus Technique.		achievement test + class assignment
18-20	12	Theoretical presentation using the schemes, rules and laws of control engineering	Analysis of control system in frequency domain and Bode Diagrams	The student should be able to analyze the balance of control systems and the ability to analyze the performance of the system in the time and frequency range. And that the student is able to design the control system.	achievement test + class assignment

21	4	Theoretical presentation using the schemes, rules and laws of control engineering	Design of control systems and Compensation concepts.		achievement test + class assignment
22-25	16	Theoretical presentation using the schemes, rules and laws of control engineering	Control system design using root locus method.	The student should be able to analyze the balance of control systems and the ability to analyze the performance of the system in the time and frequency range. And that the student is able to design the control system.	achievement test + class assignment
26-30	16	Theoretical presentation using the schemes, rules and laws of control engineering	Control system design using Bode Diagrams.		achievement test + class assignment

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] K. Ogata, "Modern Control Theory Engineering", 4th Edition 1. R.C. Dorf & R.H. Bishop: "Modern Control Systems", 10th Edition, Prentice Hall, 2005. 2. C. Phillips & R. Harbor: "Feedback Control Systems", Prentice-Hall, 1996. 3. Franklin, Powell & Emami-Naeini: "Feedback Control of Dynamic Systems", Addison-Wesley, 1993.

Special requirements (include for example workshops, periodicals, IT software, websites)	Matlab
Community-based facilities (include for example, guest Lectures , internship , field studies)	A number of electronic references and a number of specialized websites.

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

			)																
				A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D 4
	3C TE C1			*	*	*	*	*	*			*	*	*		*	*	*	*
	3C TE C2			*	*	*	*	*	*	*	*	*	*			*	*	*	*
	3C TE			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	3C TE			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	3C TE			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	3C TE			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	3C TE			*	*	*	*	*	*	*		*	*			*	*	*	
	3C TE C8			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

1. Teaching Institution	University of Alkafeel
2. University Department/Centre	Computer Engineering Techniques
3. Course title/code	Database Systems 3CTEC7
4. Programme (s) to which it contributes	Bachelor Degree of Engineering
5. Modes of Attendance offered	Face to Face and Electronic
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120 Hours(1 Hours Theory+3 Hours Practical)
8. Date of production/revision of this specification	30/05/2021

9. Aims of the Course

After studying this course, the student is expected to be able to achieve the following objectives:

1. The course aims to introduce the student to the concepts of databases.
2. Introducing the student to electronic information sources and their relationship with databases.
3. To be able to analyze databases into their basic elements and components.
4. The student should distinguish the different types of databases
5.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

B- Knowledge and Understanding

A1- Understand the general concepts of database systems.
A2- Knowing the stages of building a database system.
A3- Study the techniques adopted for documenting database systems.
A4- Viewing the categories of database system beneficiaries and determining the duties of each category.

B. Subject-specific skills
B1 - Methods for determining requirements for the system
B2 - Study of database system design methods
B3 - Database system programming skills through studying one of the approved languages
B4 - Training on the method of implementing the system with defining the data security controls of the database system

Teaching and Learning Methods

Theoretical lectures, both in Face to Face, and electronically, with practical and programming exercises.
Direct interaction with learners to identify the level of knowledge acquisition and identify strengths and weaknesses from the learner's feedback.

Assessment methods

Test students to see how much they interact with the lecture, and conduct weekly written and oral tests

C. Thinking Skills
C1- Learning accuracy and discipline in receiving knowledge and knowledge.
C2 - Learn to communicate and interact during the lecture.
C 3 - love of knowledge and benefit from knowledge.
C4- A love of research and selection of information from reliable sources.

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific source.

Assessment methods

Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories put forward.

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

D1 - Focus on those who have a great mental and absorptive capacity.
D2 - Attempting to develop those who enjoy excellence.
D3 - Raising the level of the student with an intermediate education.
D 4 - Follow up the weak students during the school year and find out the reason for their weakness.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Familiarize yourself with the course's study plan With a general introduction to database systems	Course Plan and References, Introduction to Database Approach	Lecture and lab	Exams
2	4	Characteristics and advantages of the database style with recognizing the benefits of database management software systems	Characteristics of the Database Approach, and Advantages of Using the DBMS	Lecture and lab	Exams
3,4	8	Database Languages and Interfaces, the Database System Environment, Centralized and Client/Server Architectures for DBMS, and Classification of Database Management Systems	Concepts and architecture of database systems Data Models and General Description Diagram of a Database System The three levels of the system general description architecture with data independence	Lecture and lab	Exams
5,6	8	Database languages and interfaces,	Database Languages and	Lectures and Labs	Exams

		DBMS environment, systems-centric architecture and user/server style of DBMS, with DBMS classes	Interfaces, the Database System Environment, Centralized and Client/Server Architectures for DBMS, and Classification of Database Management Systems		
7		Monthly Exams	Semester- One Mid Term Examination-One	Lectures and Labs	Exams
8,9	8	The concept of the relational model, constraints and limitations of the data model and the descriptive schema of the relational system	Relational Model Concepts, Relational Model Constraints and Relational Database Schemas.	Lectures and Labs	Exams
10,11	8	Define data with data types in structural retrieval	SQL Data Definition and Data Types	Lectures and Labs	Exams
12,13	8	sql basic query	Basic Retrieval Queries in SQL	Lectures and Labs	Exams
14	4	Phrases and Verbs Update data in language sql	Basic Update SQL statements	Lectures and Labs	Exams
15	4	Monthly exam	Semester - One Mid Term Examination	Lectures and Labs	Exams

16,17	8	Algebraic relations and relational relations	The Relational Algebra and Relational Calculus	Lectures and Labs	Exams
18-21	16	Draw data models using shapes and symbols to produce a diagram of entities and relationships E-R	Data Modeling Using the Entity-Relationship	Lectures and Labs	Exams
22,23	8	Database systems design theory and relationship normalization method The basics of reliability between variables And its impact on the process of normalizing relations	Database Design Theory and Normalization Basics of Functional Dependencies and Normalization for Relational Databases	Lectures and Labs	Exams
24	4	Monthly exam for the second semester	Semester-Two Mid Term Examination –one	Lectures and Labs	Exams
25,26	8	The natural form and its dependence on the primary key of the relationship	Normal Forms Based on Primary Keys	Lectures and Labs	Exams
27,28	8	General definition of the second level of normalization relations	General Definitions of Second Forms	Lectures and Labs	Exams
29		General definition of the third level of normalization relations	General Definitions of Third Normal Forms	Lectures and Labs	Exams

30	4	Second monthly exam	Semester- Two Mid Term Examination- Two to SQL	Lectures and Labs	Exams
31	4	Practical and theoretical final exam	Practical, Written Final Examination	Lectures and Labs	Exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] FUNDAMENTALS OF Database Systems, SIXTH EDITION, 2010 Ramez Elmasri, Department of Computer Science and Engineering, The University of Texas at Arlington, and Shamkant B. Navathe, College of Computing, Georgia Institute of Technology [2] DATABASE SYSTEM CONCEPTS, SIXTH EDITION, 2011 Abraham Silberschatz, Yale University, Henry F. Korth, Lehigh University, and S. Sudarshan, Indian Institute of Technology, Bombay
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15

Maximum number of students	150

1. Teaching Institution	Alkafeel University

2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Digital Communications/ 3CTEC3
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30

9. Aims of the Course

Preparing the student to learn about digital communication techniques and the types of digital inclusion of all kinds of inter and high frequencies.

10· Learning Outcomes, Teaching ,Learning and Assessment Methods.

A- Knowledge and Understanding

A1- Knowledge of the communication system in general.
A2- Know the types of signals.
A3- Knowing the problems that occur in communication systems.
A4- Knowledge of digital embedding techniques.

B. Subject-specific skills

B1 - Distinguish between analogue and digital communication systems.
B2 - Distinguish between analogue and digital signals.
B3 - Distinguish between analogue and digital modulation techniques.
B4 - Simulation of embedding techniques through MATLAB.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to

students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	4	Learn about the digital communication system, its advantages and disadvantages	Introduction to Digital Communications - Advantages and Disadvantages of Digital Communications System - Elements of Digital Communications System	Lecture and lab	exams and quizzes
2nd	4	Learn about sampling theory	Sampling Theorem	Lecture and lab	exams and quizzes
3rd, 4th, 5th	12	Learn about pulse modulation techniques	Pulse Amplitude Modulation (PAM) Pulse Duration (or Width) Modulation (PDM or PWM) Pulse Position Modulation (PPM)	Lecture and lab	exams and quizzes

6th, 7th	8	Familiarity with information fusion technology (pulse)	Time Division Multiplexing (TDM)	Lecture and lab	exams and quizzes
8th, 9th, 10th	12	Learn about Pulse Coded Modulation	Pulse Code Modulation (PCM)	Lecture and lab	exams and quizzes
11th	4	Familiarity with information fusion technology (pulse coded)	Digital Multiplexers	Lecture and lab	exams and quizzes
12th	4	Learn about advanced pulse-coded modulation techniques	Differential PCM (DPCM) & Adaptive DPCM (ADPCM)	Lecture and lab	exams and quizzes
13th, 14th	8	Learn about enhanced digital embedding techniques	Delta Modulation (DM) Adaptive DM (ADM)	Lecture and lab	exams and quizzes
15th - 20th	24	Learn basic digital embedding techniques	Amplitude Shift Keying (ASK) Frequency Shift Keying (FSK) Phase Shift Keying (PSK)	Lecture and lab	exams and quizzes
21st - 27th	28	Learn about advanced digital embedding techniques	Differential PSK (DPSK) Quadrature PSK (QPSK) Offset QPSK (OQPSK) Minimum Shift Keying (MSK)	Lecture and lab	exams and quizzes

			M-ary FSK M-ary PSK Quadrature Amplitude Modulation (QAM) or (QASK)		
28th, 29th, 30th	12	Identify problems that may occur in communication	Inter-Symbol Interference (ISI) Equalizer & Adaptive Equalizer Matched Filter	Lecture and lab	exams and quizzes

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1]Digital Communications Fundamentals and Applications, by Bernard Sklar, Prentice Hall, USA. [2]Communication Systems, by Simon Hyakin, Wiley, USA. [3]Modern Digital and Analog Communications Systems, by B. P. Lathi, Oxford University, England. [4]Digital Communications, by Ian A. Glover and Peter M. Grant, Prentice Hall, England. [5]Digital Communication, by Andy Bateman, Prentice Hall, USA. [6]Communication Systems an Introduction to Signals and Noise in Electrical Communication, by A. Bruce Carlson, et at, McGraw-Hill, USA.

Special requirements (include for example workshops, periodicals, IT software, websites)	Many of electronic references and a some of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel university
2. University Department/Centre	computer technology engineering
3. Course title/code	Digital signal processing /3CTEE6

4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annual
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30/5/2021
9. Aims of the Course	
Students teach the basic themes of the signal processor and its uses in the audio signal processing, image and use of digital filters.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1. Know the basics of digital signal processor. A2. Identify the types of signals A3. Knowledge of the types of systems. A4. Knowledge of designing signal processing units using time and frequency analysis and filters
B. Subject-specific skills B1. The distinction between analogue and digital communication system. B2. Distinguish between analogue and digital signals. B3. To distinguish between the types of conversions signals B4. To distinguish between the types of filters.
Teaching and Learning Methods
Learn the basics of digital signal processing according to the theory of the lecture, and to follow modern methods of learning such as the use of electronic screens and presentations.
Assessment methods

Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories put forward.

C. Thinking Skills

C1. Learn accuracy and discipline in receiving knowledge and knowledge.
C2. Learn to communicate and interact during the lecture
C3. love of knowledge and benefit from science.
C4. A love of research and selection of information from reliable sources.

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from a variety of prestigious scientific sources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on those who have a great mental and absorptive capacity.
D2. Attempting to develop those of them who enjoy excellence.
D3. Raising the level of the student with an intermediate education.

D4. Follow-up to the weak students during the school year and find out why .their weakness

1. Teaching Institution	Alkafeel university
2. University Department/Centre	computer technology engineering
3. Course title/code	Communication Fundamentals / 2CTE3

4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annual
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	16-6-2021

9. Aims of the Course

Teaching the student the basic topics of the basics of communication used in the transmission of data and information transmitted electrically.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1- Classification of communication systems.
A2- Distinguishing the signals and methods of analyzing them.
A3- Understand the process of inclusion and distinguish between its types.
A4- Understand filters and how to design them

B. Subject-specific skills
B1 - Application of mathematical engineering analyzes.
B2 - The ability to understand the basics of communication.
B 3- Participation in and interaction with real life.
B-4 - To test the communication systems that were put forward in the theoretical aspect.

Teaching and Learning Methods

-1Giving lectures.
-2Classroom and extracurricular duties.
-3Reading methodological and source books and accessing some websites (self-learning).
-4Discussion in the classroom.

Assessment methods

Test students to see how much they interact with the lecture, and conduct weekly written and oral tests.

C. Thinking Skills

C 1 - Learn accuracy and discipline in receiving knowledge and knowledge.

C2- Learn to communicate and interact during the lecture.

C 3 - love of knowledge and benefit from science.

C4- A love of research and selection of information from reliable sources .

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific sources.

Assessment methods

Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories put forward.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.
D3. Try to improve a lower-level students.
D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hour	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Identify and classify the types of periodic and non-periodic signals	Introduction to Signals and Systems: Test signals definition, signal lassification ("Energy-Power", "Periodic-Non periodic","Random deterministic")	Lecture and lab	Tests
2	4	Learn about the communication system in general and study its features and components	System Classification (Linear–Nonlinear, Time-varying and Time-invariant, Causal "Realizable" and Non Causal" Non-realizable")	Lecture and lab	Tests
3	4	Learn about communication systems and study the system in detail	System (Frequency) Transfer Function Overview, System Connection and their general Frequency Transfer function	Lecture and lab	Tests
4	4	Familiarization with the technology of the French scientist Fourier series	Signal representation using Fourier Series: Complex (exponential) and Discrete forms, Signal Spectrum (Amplitude and Phase)	Lecture and lab	Tests
5	4	Learn about the energy density technique	Power Spectral Density "PSD"	Lecture and lab	Tests
6	4	Learn about Parceval's theorem for power signals	Parceval's theorem for power signals	Lecture and lab	Tests

7	4	Learn about Fourier Transform, and Inverse Fourier.	Signal Spectrum using Fourier Transform, "Fourier and Inverse Fourier"	Lecture and lab	Tests
8	4	Learn about Energy Spectral Density "ESD"	Energy Spectral Density "ESD"	Lecture and lab	Tests
9	4	Learn about Parceval's theorem for Energy signals	Parceval's theorem for Energy signals	Lecture and lab	Tests
10	4	Learn about Filters Classification and filters types	Filters: Filtering action, Filters Classification based on (response:" ideal & practical" and mode), characteristics of filters response: Butterworth and Chebyshev response, decade & octave principles	Lecture and lab	Tests
11	4	Learn about Typical frequency response curve for LPF, HPF, Passive Filters (RC,RL,RLC).	Typical frequency response curve for LPF, HPF, Passive (lumped elements) Filters (RC,RL,RLC) and their response	Lecture and lab	Tests
12	4	Learn about active filters	Active Filters and Design Procedure, Frequency Transformation with circuits implementation	Lecture and lab	Tests
13	4	Learn about Amplitude Modulation: DSBSC	Amplitude Modulation: DSBSC	Lecture and lab	Tests
14	4	Learn about Amplitude Modulation: DSBLC	Amplitude Modulation: DSBLC	Lecture and lab	Tests

15	4	Learn about Amplitude De-Modulation	Amplitude De-Modulation	Lecture and lab	Tests
16	4	Learn about FDM	Frequency Division Multiplexing "FDM"	Lecture and lab	Tests
17	4	Learn about Signal – to – Noise Ratio in AM	Signal – to – Noise Ratio in AM	Lecture and lab	Tests
18	4	Learn about FM	Frequency Modulation	Lecture and lab	Tests
19	4	Learn about Commercial FM Transmission	Commercial FM Transmission	Lecture and lab	Tests
20	4	Learn about Wide Band FM	Wide Band FM	Lecture and lab	Tests
21	4	Learn about Narrow Band FM	Narrow Band FM	Lecture and lab	Tests
22	4	Learn about PLL	Phase Locked Loop "PLL"	Lecture and lab	Tests
23	4	Learn about Noise in communication systems: Noise in AM systems, Noise in FM Systems, Noise Figure Concept	Noise in communication systems: Noise in AM systems, Noise in FM Systems, Noise Figure Concept	Lecture and lab	Tests
24	4	Learn about Sky Noise Temperature, Equivalent System Noise Temperature	Sky Noise Temperature, Equivalent System Noise Temperature	Lecture and lab	Tests
25	4	Learn about Transmission line	Transmission line	Lecture and lab	Tests
26	4	Learn about Transmission line	Transmission line	Lecture and lab	Tests
27	4	Learn about Transmission line	Transmission line	Lecture and lab	Tests

28	4	Learn about Smith chart	Smith chart	Lecture and lab	Tests
29	4	Learn about Smith chart	Smith chart	Lecture and lab	Tests
30	4	Learn about Smith chart	Smith chart	Lecture and lab	Tests

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Theraja series and Schaum series. - Principles of electronics communication systems", Louis Frenzel, Fourth edition.
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

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.

third level Stage

1. Teaching Institution	University of Alkafeel
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Computer Applications/ 2CTE6
4. Programme (s) to which it contributes	Bachelor Degree
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120

8. Date of production/revision of this specification	30 / 05 / 2021
9. Aims of the Course	
Introduce the MATLAB as a programming language to students and explain to them how to find the best solutions. It is rich of many build-in functions that are easy to use and edit, as well as lots of useful tools that can be implemented easily and effectively.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods
A- Knowledge and Understanding A1. Learn about a programming language and its general methods. A2. Learn how to create functions, and how to deal with the logical statements. A3. Learn about programming algorithms. A4. Learn how to write an efficient code that give me the best solution.
B. Subject-specific skills B1. Highlight the efficient of MATLAB tools among the other progamming languages. B2. Compare the effective and ineffective programming languages. B3. Learn the best strategy in order to find the solutions using computer. B4. Design some advanced programs.
Teaching and Learning Methods
The main learning method is the interaction between lecturer and students during the class. Also, use the most modern methods of teaching such as: smart screens, and present lectures via slides in Microsoft PowerPoints.
Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

C. Thinking Skills

C1. Educate students the importance of the science and modern knowledge and technology to encourage more students in this field as well as support the society.
C2. Learn students how to interact during the class.
C3. Learn students how to educate the community and the world
C4. Prepare students to do scientific research.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources .

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. General and acquired skills (other skills related to a personal improvement or those which can be achieved via practical development)
D2. Encourage students to gain skills via personal development.
D3. Ask students to translate their general/ personal life situations to programming applications.
D4. Track students in their academic study to see their progress and challenges.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Introduction about MATLAB and its environment	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).	Lecture and computer laboratory	Test, homework, interacting during the class
2,3	8	Learn how to write a simple script in MATLAB	First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose, Deleting Rows or Columns.	Lecture and computer laboratory	Test, homework, interacting during the class
5	4	Learn about variables	Variables and assignment statement, logical operator.	Lecture and computer laboratory	Test, homework, interacting during the class

6	4	Arrays, and build-in functions	Arrays, Built-in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).	Lecture and computer laboratory	Test, homework, interacting during the class
8^{th}, 9^{th}, 10^{th}	12	Graphics, plot data/ diagrams	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).	Lecture and computer laboratory	Test, homework, interacting during the class
7, 8	8	Different program formats, input/ output data	Arguments and return values, M-file, input-output statement.	Lecture and computer laboratory	Test, homework, interacting during the class
9, 10, 11	12	Conditional statements	Conditional Statements (If, Else, Elseif, switch case)	Lecture and computer laboratory	Test, homework, interacting during the class
12, 13, 14	12	Repetition statements	Repetition statements: (While statement, For statement)	Lecture and computer laboratory	Test, homework, interacting during the class

15	4	Text processing	Text processing include: string, digits, characters, etc.	Lecture and computer laboratory	Test, homework, interacting during the class
16	4	Create and edit functions	Procedures and Functions (custom-made MATLAB function, define a function, the input and the output variables, calling functions)	Lecture and computer laboratory	Test, homework, interacting during the class
17	4	Cells and structure	Cells (Pre-defined cells, its usage, cell Arrays, cell two structure).	Lecture and computer laboratory	Test, homework, interacting during the class
18, 19, 20	12	Graphics and objects processing	Handle graphics and user interface: 1. Pre-.defined dialogs Handle graphics: .2 a) Graphics objects b) .Properties of objects c) Modifying properties of graphics objects.	Lecture and computer laboratory	Test, homework, interacting during the class
21	4	Graphical User Interface (GUI)	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output)	Lecture and computer laboratory	Test, homework, interacting during the class

22, 23,	8	Design GUI	Predefined GUIs and Dialog Boxes.	Lecture and computer laboratory	Test, homework, interacting during the class
24, 25	8	Interactive programs	Menu-driven programs a) Controls: uimenu and uicontrol b) Interactive graphics c) Large program logic flow	Lecture and computer laboratory	Test, homework, interacting during the class
26, 27	8	File processing	Manipulating Text (Writing to a text file, reading from a text file Randomizing and sorting a list, Searching a list.	Lecture and computer laboratory	Test, homework, interacting during the class
28, 29, 30	12	Image processing	Introduction to Image Analysis (Reading, Writing, Displaying Images)	Lecture and computer laboratory	Test, homework, interacting during the class

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] The MathWorks Inc., MATLAB R2013, 2013. [2] Zahir M. Hussain, Lectures on Computer Applications with MATLAB, University of Kufa Press, 2017.

	[3] Stephen J. Chapman, MATLAB Programming for Engineers, 5th Edition, Cengage Learning, Boston, USA, 2016. [4] William J. Palm III, Introduction to MATLAB for Engineers, 3rd Edition, McGraw-Hill, 2010. [5] David Houcque, Introduction to MATLAB for Engineering Students, Northwestern University, 2005.
Special requirements (include for example workshops, periodicals, IT software, websites)	Set of electronics resources and some specialized websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	Workshops, internships

13. Admissions	
Pre-requisites	Two semesters academic systems
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	University of Alkafeel

2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Computer Programming (II)/ 2CTE5
4. Programme (s) to which it contributes	Bachelor Degree
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30 / 05 / 2021

9. Aims of the Course

The objective of this course is to teach the student to write programs with an emphasis on solving various problems using the principles and principles of structure design by adopting a strategy to simplify problem solving

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1- The student knows how to use object-oriented programming.
A2- The student will identify the reasons for using object-oriented programming in all fields.
A3- The student knows how to implement programs.
A4- The student distinguishes between object-oriented programming and programming in C++ from other languages.

B. Subject-specific skills

B1 - The student acquires the skill of designing useful programs.
B2 - The student acquires the skill of applying programs in various fields
B3 - The student acquires the skill of developing programs in the C++ language.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1 - 2	8	Understand the basic concepts and tools of Structured Programming using C++	C++ Review (Program structure, namespace, identifiers, variables, constants, enum, operators, typecastings, control structures and functions).	Lecture and lab	The exams
3	4	Understand the basic concepts of object-oriented programming	Introduction to Object-Oriented Programming in C++.	Lecture and lab	The exams
4 - 8	20	The ability to analyze, design and implement software solutions to applied problems according to object-oriented programming concepts	Objects and Classes (Basics of objects an classes in C++, private and public members, static data and function members, constructors and their types, destructors and operator overloading).	Lecture and lab	The exams
9 - 14	24	The concepts of inheritance are applied	Inheritance (Concepts of	Lecture and lab	The exams

		in the programs that he builds to achieve the largest possible reduction in the code	Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class).		
15 - 19	20	Understand, apply and design software issues that rely on the concept of polymorphism	Polymorphism (Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism).	Lecture and lab	The exams
20 - 24	20	The ability to deal with files in various forms to store and retrieve data	I/O and File management (Concepts of streams, cin and cout objects, C++ stream classes, Unformatted and formatted I/O, manipulators, File stream, C++ File stream classes, File management functions, File modes, Binary and random files).	Lecture and lab	The exams

25 - 30	24	Develop general programs that do not depend on a specific type of data, as well as dealing with commonly used general algorithms and data structures, and are also able to design programs that have the ability to deal with error cases that occur during program execution.	Templates, Exceptions and STL (What is template? function templates and class templates, Introduction to exception, try-catch-throw, multiple catch, catch all, rethrowing user defined exceptions, Overview and use of Standard Template Library).	Lecture and lab	The exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Object-oriented programming using C++ كتاب من قبل جويس فاريل 2-Object Oriented Programming In C++ (4th Edition) robert lafore 3- C++ من البداية الى البرمجة الكيانية د نضال العبادي
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

			)																	
				A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D 4
Seco nd	2CTE 1	Microprocessor Architecture		*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
	2CTE 2	Instrumentation and Measurements		*	*	*	*	*	*	*		*	*	*	*	*	*	*	*
	2CTE 3	Communication Fundamentals		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	2CTE 4	Electronics		*	*	*	*	*	*	*		*	*	*	*	*	*	*	*
	2CTE 5	Computer Programming (II)		*	*	*	*	*	*	*		*	*	*	*	*	*	*	*
	2CTE 6	Computer Applications		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	2CTE 7	Mathematics (II)		*	*	*	*	*	*		*	*	*	*	*	*	*	*	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel University
2. University Department/Centre	Computer Techniques Engineering
3. Course title/code	Electronics /2CTE4
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annually
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
Acquire the student the necessary skills to understand and analyze electrical circuits	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
C- Knowledge and Understanding A1. Ability to apply knowledge in electronic circuits A2. The ability to design, formulate and apply electronic circuits and implement them in practice A3. The ability to be provided with sufficient information to pursue their academic qualifications A4. Ability to work in applied fields
B. Subject-specific skills B1.The ability to apply the skills of electronic circuits and its components B2. Participation and success in their professional life through practical training B3. Ability to work collectively within a multidisciplinary team
Teaching and Learning Methods
1. Lecturing 2. Classroom and extracurricular duties

3. Reading methodological and source books and accessing some websites (self-learning).
4. Discussion in the classroom

Assessment methods

Test students to see how much they interact with the lecture, and conduct weekly written and oral tests

C. Thinking Skills

C1. Learn accuracy and discipline in receiving knowledge and knowledge
C2. Learn to communicate and interact during the lecture
C3. interest of knowledge and benefit from knowledge
C4. . interest of research and selection of information from reliable sources

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific sources

Assessment methods

Students are tested orally and practically periodically to determine their comprehension of the scientific theories proposed

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

D1. Focus on those who have a great mental ability to absorb
D2. Trying to develop those who are distinguished

D3 Raising the level of the student with an intermediate education.
D4. Monitoring weak students during the school year and finding out the reason for their weakness

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1.2.3	12	Make the student able to distinguish between materials in terms of their electrical conductivity. And the study of the physical structure of the diode and transistor and the method of forward and reverse coupling	Physic Of semiconductor, Diode and Transistor.	Lecture and lab	the exams
4.5.6	12	Recognize the connection of the electrical circuit and the process of rectifying the incoming waves, and the derivation of special laws for this purpose	Diode Equivalent Circuits. DC analysis , , ac to DC Rectifier (HWR and FWR)	Lecture and lab	the exams
7,8	8	Make the student able to know the properties of these circuits and their components and the effect of each component on the	Clipper ,Clamper cct.	Lecture and lab	the exams

		shape of the external vector			
9,10,11, 12	16	Understanding Transistor Circuits How to distinguish between common emitter and base The common and the common collector, what are the differences between them, the point of their operation, and the distinction of the special circuits for each type	BJT Transistor DC Equivalent Circuits, (C.B, C.C and C.E), DC analysis, Load line and Q-Points	Lecture and lab	the exams
13,14	8	Make the student able to analyze the electrical circuit and extract the values of voltage gain, current gain, input resistance and output resistance, and knowledge of the dynamic and statistical resistance	BJT Transistor ac Equivalent Circuits h-parameters and re- model	Lecture and lab	the exams
15,16	8	Make the student able to understand the mechanism of amplification of the input signal of the transistor and what is the effect of connecting the transistor on the amount and shape of the outgoing wave	Transistor Amplifier	Lecture and lab	the exams

18 , 17 20 ,19,	16	Learn about this type of transistors, what they do, and what are their advantages, and analyze the circuits of this type of transistors	FET Transistor DC Equivalent Circuits, (C.G, C.S and C.D), DC analysis, Load line and Q-Points	Lecture and lab	the exams
22 , 21	8	Enable the student to understand the amplification of power and how the electrical circuit is described for this purpose, and to know some laws of amplification of power	Power Amplifiers.	Lecture and lab	the exams
,24 , 23 26, 25	16	Identify and analyze the properties of these circuits, their mechanism of action, and the effect of their components on the properties of the outgoing wave for each circuit	Operational Amplifiers cct. (Inverter, non-inverter, summing, subsector, integration, and diff.)	Lecture and lab	the exams
28 , 27	8	Learn about the components of the oscillator, what is the purpose of studying it, the mechanism of its currency, and how to use it	Oscillators	Lecture and lab	the exams
30 ,29	8	Understand integrated circuits, what is the purpose	Integrated Circuits	Lecture and lab	the exams

		of their manufacture, learn about their types, and understand their mechanism			

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Electronic Devices and Circuit theory (for Boylested([2]electronic technology (for Theraja([1]Electronic Devices (for Floyd([1]S. Choudhury Tata McGraw Hill – 2003
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	annual system
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Al-Kafeel University
2. University Department/Centre	computer technology engineering
3. Course title/code	**2CTE2/ Instrumentation and measurements**
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annual
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30/05/2021

9. Aims of the Course

•Familiarity with international units of measurement, especially those related to electrical engineering.

•Analyzing the work of the components of the measurement system and determining the duties of each of them in detail.

•Classification of measuring devices and designing some of them.

•Proficiency in measurements that can be made on the electric wave

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1- Understand the measurements that can be made on an electrical signal.

A2- Understand the measurement system.

A3- Understand how and what the internal and external sources of errors affect the measurement system and its devices, and determine the mathematical laws necessary to calculate the amount of error and the acceptable rate of the signal.

A4- Understand the basics of the sensing system (analogue and digital) for physical quantities.
A5- Understand the types and installation of measuring devices and the differences between those based on a magnetic field and those based on an electric field.
A6 - Understand the types and installation of measuring devices and the differences between digital and analogue ones.
A7 - Understand how to design and components of a computer-digital measurement system.
A8 - Understand the difference between active and passive measuring devices.
A9- Understand the basic types of electrical signal recording devices.
A10- Understand the method used in the design of the multimeter device

B. Subject-specific skills

B1 - Basic skills for the foundations of electrical engineering, basic electrical circuit theories, and the basics of physics.
B2 - Basic skills for digital and analogue mathematics and electronics.
B3 - Basic skills for the use of electrical engineering instrumentation

Teaching and Learning Methods

Learn the basics of digital communication according to lecture theory, and follow modern methods of learning such as using electronic screens and presentations.

Assessment methods

Test students to see how much they interact with the lecture, and conduct weekly written and oral tests.

C. Thinking Skills

C1 - Learn accuracy and discipline in receiving knowledge and knowledge.
C2 - Learn to communicate and interact during the lecture.

C3 - love of knowledge and benefit from knowledge.
C4- A love of research and selection of information from reliable sources.

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific sources.

Assessment methods

Students are tested orally and practically periodically to determine their .comprehension of the scientific theories proposed

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

D1- Focus on those who have a great mental and absorptive capacity.
D2 - Attempting to develop those of them who enjoy excellence.
D3 - Raising the level of the student with an intermediate education.
D 4 - Follow up the weak students during the school year and find out the reason for their weakness.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd ,	8	Familiarity with unit systems and measurement standards	Systems of Units and Standards of Measurement	Lecture and lab	the exams
3rd ,4th ,5th	12	Learn about accuracy and precision, types of error, statistical analysis of data	Accuracy and precision, Types of error, Statistical Analysis of Data	Lecture and lab	the exams
6th ,7th, 8th	12	Familiarity with tools for measuring basic electrical parameters (electromechanical Electrical tools: design and static and dynamic characteristics . meter readings, error and compensation)	Instruments for Measuring Basic Electrical Parameters (Electromechanical and electric instruments: design, static and dynamic characteristics. Meter readings, error and compensation).	Lecture and lab	the exams
9th , 10th , 11th	12	Learn about an electronic measuring instrument.	Electronic measuring instrument.	Lecture and lab	the exams

12th ,13th , 14th	12	Identification of bridges (DC and AC bridges: measurement of basic electrical parameters, frequency measurement) .	Bridges (DC and AC bridges: basic electrical parameters measurement, frequency measurement).	Lecture and lab	the exams
15th ,16th , 17th	12	Familiarity with oscilloscopes (CRT deflection, sensors and functions, measurement techniques, Species)	Oscilloscopes (CRT deflection, probes and functions, measuring techniques, types)	Lecture and lab	the exams
18th , 19th , 20th	12	Recognize transducers (mode, pressure, velocity, acceleration, force, torque, Temperature, photosensitive transducers, cage strain, differential adapter)	Transducers (Position, pressure, velocity, acceleration, force, torque, temperature, Photosensitive transducers, strain cage, differential transformer)	Lecture and lab	the exams

21st, 22nd	8	Signal generation recognition (introduction, sine wave generator, frequency Composite Signal Generator, Frequency Divider Generator)	Signal Generation (Introduction, The sine wave generator, frequency synthesized signal generator, frequency divider generator)	Lecture and lab	the exams
23rd, 24th	8	Learn about the concept of a digital tool.	Digital instrument.	Lecture and lab	the exams
25th ,26th , 27th	12	Understand the concept of tools for generation	Instruments for generation	Lecture and lab	the exams
28th , 29th , 30th	12	Learn to analyze waveform oscillators.	Analysis of wave form oscillators.	Lecture and lab	the exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Y. Bakouros and V. Kelessidis INNOREGIO: dissemination of innovation and knowledge techniques, January 2000.

	[2] J.R. Meredith and S.J. Mantel J. Wiley & Sons, 1995 [3] Principles of , NPC publication [1] S. Choudhury Tata McGraw Hill – 2003
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	University of Alkafeel

2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Mathematics (II)/ 2CTE7
4. Programme (s) to which it contributes	Bachelor Degree
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30 / 05 / 2021
9. Aims of the Course	
The course aims to introduce students to mathematics through the necessary mathematical laws and problems for the purpose of helping them in their studies in their field of specialization.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1- The student will be familiar with the complex system of equations. A2- The student learns about the differential of equations with one variable and more than one variable and their various applications. A3- The student learns about dual and triple speaking and their applications. A4- The student gets to know the mathematics of vectors and its theorems. A5- The student will be familiar with the system of differential equations of different degrees and the methods of solving them. A6- The student learns about series and its different applications.
B. Subject-specific skills B1 - The student acquires the ability to solve mathematical problems (numerical, algebraic, and geometric). B2 - The student acquires the methods and methods of mathematical proof and its simple logical foundations. B3 - The student acquires various methods of conducting operations that help the learner to make the appropriate choice according to the nature of the situation. B4- The student acquires the ability to collect, classify, tabulate, represent and interpret quantitative and numerical data.

Teaching and Learning Methods
The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.
Assessment methods
Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.
C. Thinking Skills C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science. C2. Learn interaction during the class. C3. Learn how to love the science and make the most use of it. C4. Learn how to love the research and pick up the useful information from a trusted resource.
Teaching and Learning Methods
Given theoretical and practical lectures based on different and robust resources.
Assessment methods
Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1 & 2	6		Complex numbers, polar form of complex numbers, linear algebra for complex number in polar and Cartesian coordinates	Lecture	the exams
3 & 4	6		Complex function, complex variables	Lecture	the exams
5 & 6	6		Cauchy- Reimann equations, Harmonics	Lecture	the exams
7 & 8	6		Double integral	Lecture	the exams
9 & 10	6		Multiple integration, surface area	Lecture	the exams
11	3		Green's theorem	Lecture	the exams
12	3		Stock's theorem	Lecture	the exams
13 & 14	6		Theory of vector field, vector variable	Lecture	the exams
15 & 16	6		Function, separation and convolution	Lecture	the exams

17, 18, 19 , 20	12		Infinite series, power series con. And din series of number, Tayler series and McLaurin series	Lecture	the exams
21 & 22	6		Matrices, inverse of matrix, solution of Hogging equations by matrices, Eigen values, Eigen vectors	Lecture	the exams
23, 24, 25, 26, 27 & 28	18		Differential equations, D.E. of first order and of order N, and applications	Lecture	the exams
29 & 30	6		Review	Lecture	the exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Thomas Calculus Based on The Original Work by George B. Thomas, Jr., 14th Ed. 2018. [2] Advanced Engineering Mathematics by C. Ray Wylie [3] Math Refresher for Scientists and Engineers by John R. Fanchi, 3rd Ed., 2006.

	[4] Advanced Engineering Mathematics by Erwin Kreyszig, 10th Ed., 2011. [5] Advanced Engineering by Alan Jeffrey, University of Newcastle-Upon-Tyne, 2002. [6] Advanced Mathematics for Engineers and Scientists, SI (Metric) Edition, by Murray R. Spiegel, Asian Student Edition, 1983. [7] التحليل الهندسي والعددي التطبيقي، حسن مجيد الدلفي و محمود عطا الله، الجامعة التكنلوجية – جمهورية العراق بغداد، الطبعة الأولى 1999.
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st,2nd ,3th	12	Identify the components of a digital signal processor and distinguish them from an analogue signal processor	Introduction to digital signal processing: Basic elements of DSP, DSP vs. ASP, application of DSP, Continues time signals vs. discrete time signals	Lecture and lab	Tests
4th , 5th,6th	12	Identify discrete signals	Discrete time signals and sequences	Lecture and lab	Tests
7th,8th,9th	12	Identify types of discrete signals	Standard of discrete time signals (sequences): Unit sample sequence, Unit step sequence, Unit ramp sequence, Exponential sequence,	Lecture and lab	Tests
10th, 11th, 12th	12	Identify the types of discrete systems and	(classification of discrete time signals)System properties:	Lecture and lab	Tests

		their properties	Static and dynamic system, shift invariant and shift variant system, Causal and non-causal system, linear and nonlinear system, stable and unstable system.		
13th ,14th	8	Identify the convolution of signals and methods	Convolution: Direct form method, graphical method, slide rule method	Lecture and lab	Tests
15th, 16th	8	Identify the correlation of signals and methods	Correlation of discrete time sequence: Cross correlation and auto correlation	Lecture and lab	Tests
17th, 18th	8	Identify the frequency domain and how to find a representation of the frequency response	Frequency domain representation: Find Frequency response	Lecture and lab	Tests

19th, 20th, 21st	12	Identify discrete Fourier transform and how it is used to convert signals from the time domain to the frequency domain and vice versa, and how to find convolution	Discrete Fourier transform (DFT), Linear convolution using DFT, Invers Discrete Fourier transform (IDFT)	Lecture and lab	Tests
22nd, 23rd, 24	12	Learn about the fast Fourier transform and the butterfly method	Fast Fourier transform(FFT): Butterfly computation , Invers Fast Fourier transform (IFFT)	Lecture and lab	Tests
25th, 26th, 27th	12	Identify z-transform and their characteristics and applications	Introduction to Z transform: Definition of Z transform and ROC, Properties of Z transform, Inverse Z	Lecture and lab	Tests

			transform, application of Z transform(pole& zero plot ,causality and stability of Z transform, solution of difference equation using Z transform		
28th, 29th, 30th	12	Identify digital filters and kinds	Realization of digital filter: Basic FIR filter structure, direct form of FIR structure, Cascaded form of FIR structure, Basic IIR filter structure, direct form of IIR structure, Cascaded form of IIR structure, Parallel form of IIR structure	Lecture and lab	Tests

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1Digital Signal Processing, Fundamentals and Applications, by Li Tan, DeVry University, Decatur, Georgia,2008. [2]Schaum's Outline of Theory and Problems of Digital Signal Processing, by Monson H. Hayes,Professor of Electrical and Computer EngineeringGeorgia Institute of Technology,1999. [3]Digital signal processing , Principles, Algorithims, and Applications, by John G. Proakis and Dimitris G. Manolakis,1996. [4] Digital signal processing, second edition, Steven W. Smith
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	University of Alkafeel
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Engineering Analysis / 3CTEC4
4. Programme (s) to which it contributes	Bachelor Degree
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30 / 05 / 2021
9. Aims of the Course	
The course aims to help the student understand the mathematical rules and equations necessary for the purpose of solving electrical circuits	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1- Clarify the basic concepts in solving mathematical problems necessary for the purpose of solving electrical circuits complex by a set of laws. A2- Acquisition of skills in dealing with the problem. A3- Acquire basic skills as an introduction to the analysis of complex electrical circuits. A4- Acquisition of theoretical concepts to deal with the analysis of complex electrical circuits using laws and mathematical problems as (Numerical computations, Solution of nonlinear equation, Numerical solution of ordinary differential equation) A5 - Qualifying students to have a broad knowledge of ways to solve mathematical problems necessary for the purpose of solving electrical circuits The complex is what enables the graduate to employ that knowledge in the field of computer engineering. A6 - Qualifying students to be familiar with the theoretical and practical aspects.

B. Subject-specific skills

B1 - Ability to analyze complex electrical circuits.
B2 - The ability to think about solving the problem according to certain rules.
B3 - The ability to implement methods of solving mathematical problems in a practical way to ensure results.
B 4- Knowing the comparison between the theoretical side in solving mathematical problems and the practical side.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.
D2. Try to support and improve the ability of most talent students.
D3. Try to improve a lower-level students.
D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st,2nd,3rd,4th,5th, 6th,7th	28	Identify the characteristics of the Laplace transformer and study its theories and applications	Laplace transform, Properties, theorems and applications	Lecture and lab	The exams
8th,9th,10th, 11th,12th,13th,14th	28	Identify the characteristics of the Z transformer and study its theories and applications	Z-transform, properties, theorems and applications	Lecture and lab	The exams
15th,16th,17th,18th,19th	20	Probability recognition (key terms, probability and set notation, law of probability, independent events)	Probability (Basic terminology, probability and set notation, law of probability, independent events) , Statistics(Graphical representation, measure of central	Lecture and lab	The exams

			tendency, measure of dispersion)		
20th,21th,22th,23th	16	Familiarity with numerical computations (halving method, false position method, Newton-Raphson method, solving algebraic and transcendental equations, solving linear simultaneous equations 1) direct methods a) Gaussian elimination b) Gauss Jordan 2) iterative method	Numerical computations (bisection method, false position method, Newton-Raphson method, solution of algebraic and transcendental equations, solution of linear simultaneous equations 1)Direct methods a)Gauss elimination B)Gauss Jordan 2)Iterative method a)Jacobi's B)Gauss-seidel iteration)	Lecture and lab	The exams
24th,25th	8	Learn about solving a nonlinear equation (Newton-Raphson method)	Solution of nonlinear equation (Newton-Raphson method)	Lecture and lab	The exams

26th,27th,28th	12		Numerical solution of ordinary differential equation (Picard's , Euler's method))	Lecture and lab	The exams
29th,30th	8	Recognize the numerical solution of an ordinary differential equation (Pickard's method, Euler's method))	Matrices (Matrix operations, related matrices, solution of linear system of equations, linear transformations, Cayley-Hamilton theorem)	Lecture and lab	The exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Advanced Engineering Mathematics (K. A. Stroud). [2] Advanced Engineering Mathematics (Alan Jeffrey). [3] Advanced Engineering Mathematics (Erwin Kreyszig). [4] Advanced Engineering Mathematics (Dean G. Duffy). [5] Introductory Methods of Numerical Analysis (S.S. Sastry)
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.

Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel University
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Real Time Systems Design/ 3CTEC5
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
Giving the student about the basic concepts of real-time systems and their most important components and how to build them	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods.

A- Knowledge and Understanding

A1- Clarify the basic concepts of real-time systems, how they work, and their real-world applications.
A2- Acquisition of skills in dealing with the problem.
A3- Acquiring basic skills as an introduction to building any real-time computer-controlled system.
A4- Acquisition of theoretical concepts for dealing with real-time systems.
A5 - To qualify students for a broad knowledge of real-time system design.
A6 - Qualifying students to be familiar with the theoretical and practical aspects.

B. Subject-specific skills

B1 - Real-time system analysis.
B2 - Thinking about solving the problem according to certain rules.
B3 - Solve the problem and find a solution to make the system free of defects and problems.
B 4- Compare the types of problems and how to find a solution to the problem.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hour	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1 -2- 3	12	Learn the basic concepts of real-time systems, how they work, and their real-world applications.	Definitions of RTS.	Lecture and lab	exams and quizzes
4 -5	8	Distinguish between the different properties of real time systems.	Signals, Systems, Specification	Lecture and lab	exams and quizzes
6-7-8	12	The ability to construct and analyze an analog real time circuit using an operational amplifier.	Analog computer components, Systems	Lecture and lab	exams and quizzes
9 -10 - 11	12	Recognize signal converters from analogue to digital and back	ADC, DAC: [Definition, Types, Specifications, Errors, C/Cs and Interfacing choosing].	Lecture and lab	exams and quizzes
12	4	Learn the basics of the digital system.	Introduction to Digital systems.	Lecture and lab	exams and quizzes
13 -14	8	Recognize the programmable and non-programmable interface.	Basic interfacing devices.	Lecture and lab	exams and quizzes
15	4	Learn how to control the transfer of data to and from the computer.	Data Transfer controlling	Lecture and lab	exams and quizzes

16	4	Understand the programmable and non-programmable interface.	Un programmable interfacing devices	Lecture and lab	exams and quizzes
17- 19-20-21	16		Programmable interfacing devices [8-bit compatible, General purpose, Timers, Peripheral controller].	Lecture and lab	exams and quizzes
22-23-24	12	Understand the concept of cutting and how to deal with cutting software and the digital controller for cutting 8259	Interrupts [Introduction, Types (hardware & software), Controller 8259A,[Handshaking and interrupts methods	Lecture and lab	exams and quizzes
25-26-27-28-29-30	24	Design and implementation of real time systems based on microcontrollers and sensors.	Design and Implementation of real time systems based on microcontrollers and sensors.	Lecture and lab	exams and quizzes

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Real-Time Systems , Janos Sztipanovits & E. Bronson [2] Introduction to Real-Time Systems , Peter Puschner [2] arduino guide App .
Special requirements (include for example workshops, periodicals, IT software, websites)	Many of electronic references and a some of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

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.

The fourth Stage

1. Teaching Institution	Alkafeel University
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Advanced Computer Technology / 4CTEE7
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
• Study of the advanced internal architecture of the 80386 microprocessor. • Studying addressing methods.	

• Studying the types and methods of storage in the main, temporary and virtual memories.
• Studying the working method of the processor, which operates in the system of fragmentation and teleportation.
• An architectural study and features of some designs of recent generations of microprocessors with multiple hearts.
• An architectural study and features of some designs of recent generations of microprocessors with the ability to parallel processing.
• Studying the modern types of input systems with the sudden interruption systems and the direct presence of memory by the input units.

10· Learning Outcomes, Teaching ,Learning and Assessment Methods.

A- Knowledge and Understanding

A1- Understand how the parts of the computer interact to carry out an instruction.
A2- Understand how to exploit effective computer parts in determining the speed of execution of program commands, to reach optimal performance.
A3- Understand how to develop a processor speed scale that is more comprehensive and understandable than the processor speed
A4- Understand the basics of the hierarchical memory system and its performance measures.
A5- Understand how the components of the hierarchical memory system interact when executing program commands.
A6- Understand the impact of the hashing system, routing, and codification of commands in designing processors that work with the fastest possible performance
A7 - Understand the impact of the parallel processing system, and the multiplicity (cores) of the microprocessor in increasing the speed of the computer
A8 - Understand how a skilled programmer can take advantage of the appropriate addressing system to optimize the use of the available memory size and the maximum speed in accessing stored variables.

B. Subject-specific skills

B1- Using the assembly language and knowing how to work with memory segments
B 2- The ability to calculate the maximum possible size of memory for each processor
B3- The ability to distinguish the features of the processor and the benefits of registers and cache memory, and the difference between cache memory and the dome of types of memory

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4		Introduction to computers - Internal organization of computers	Lecture and lab	exams and quizzes
2	4		Introduction to assembly programming	Lecture and lab	exams and quizzes
3	4		More about segment in the 80x86	Lecture and lab	exams and quizzes
4 , 5	8		The µP and its architecture . Addressing modes	Lecture and lab	exams and quizzes
6 , 7	8		Protected mode memory addressing . Selectors and descriptors . Local and global descriptor tables	Lecture and lab	exams and quizzes
8 , 9	8		Descriptor and page table entries - Program – invisible registers - Illustrating local memory access Examples	Lecture and lab	exams and quizzes
10 , 11	8		Memory paging - Virtual memory	Lecture and lab	exams and quizzes

12 , 13	8		Paging mechanism . Segment translation . Page translation	Lecture and lab	exams and quizzes
14	4		TLB Examples	Lecture and lab	exams and quizzes
15	4		Major changes in the 80386	Lecture and lab	exams and quizzes
16	4		Hardware organization of the memory address space	Lecture and lab	exams and quizzes
17	4		Bus states and pipelined and non pipelined bus cycles.	Lecture and lab	exams and quizzes
18 , 19	8		Cache memory - Cache organization . Fully associative . Direct mapped . Set associative	Lecture and lab	exams and quizzes
20 , 21	8		Examples	Lecture and lab	exams and quizzes
22 , 23	8		Cache memory used for 80386 - Direct Maps - Two-way set associative	Lecture and lab	exams and quizzes
24	4		Enhancements of 80386	Lecture and lab	exams and quizzes
25	4		Pipelining design Techniques	Lecture and lab	exams and quizzes

26 , 27	8		Intel's Pentium . Features of the Pentium . Intel's overdrive technology	Lecture and lab	exams and quizzes
28	4		Pentium pro . Out of order execution	Lecture and lab	exams and quizzes
29 , 30	8		Other Pentium processors - Core Processor		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Advanced Computer Architecture and Parallel Processing :by Hesham El-Rewini & Mostafa Abd-El-Barr \ Copyright © 2005 by John Wiley & Sons . [2] Principles of computer architecture :by Miles J. Murdocca \ CLASS TEST EDITION – AUGUST 1999 \ Copyright©1999 Prentice Hall [3] Intel 80386 hardware reference manual \ @INTEl CORPORATION 1986.
Special requirements (include for example workshops, periodicals, IT software, websites)	Many of electronic references and a some of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15

Maximum number of students	150

1. Teaching Institution	Alkafeel university
2. University Department/Centre	computer technology engineering
3. Course title/code	Computer Networks Protocols/ 4CTEC4
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annual
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	16-6-2021
9. Aims of the Course	
Teaching the student the basic topics of the basics of protocols used in the transmission of data and information transmitted electrically.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods
D- Knowledge and Understanding A1- Classification of protocols. A2- Distinguishing the types of layers and methods of analyzing them. A3- Understand the process of inclusion and distinguish between its types. A4- Understand network layer protocols.
B. Subject-specific skills B1 - Application of layers. B2 - The ability to understand the basics of protocols. B 3- Participation in and interaction with real life. B-4 - To test the protocols that were put forward in the theoretical aspect.
Teaching and Learning Methods
1- Giving lectures. 2- Classroom and extracurricular duties.

3- Reading methodological and source books and accessing some websites (self-learning).
4- Discussion in the classroom.

Assessment methods

Test students to see how much they interact with the lecture, and conduct weekly written and oral tests.

C. Thinking Skills

C 1 - Learn accuracy and discipline in receiving knowledge and knowledge.
C2- Learn to communicate and interact during the lecture.
C 3 - love of knowledge and benefit from science.
C4- A love of research and selection of information from reliable sources .

Teaching and Learning Methods

Theoretical and practical lectures and presentation of information from various reputable scientific sources.

Assessment methods

Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories put forward.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hour	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Learn about Introduction to the OSI Reference Mode	Introduction to the OSI Reference Mode	Lecture and lab	Tests
2	4	Learn about the TCP/IP Reference Model	TCP/IP Reference Model	Lecture and lab	Tests
3	4	Learn about Application Layer Protocols	Application Layer Protocols	Lecture and lab	Tests
4	4	Familiarization with the technology of WWW	WWW	Lecture and lab	Tests
5	4	Learn about the (HTTP, HTTPs, FTP)	(HTTP, HTTPs, FTP)	Lecture and lab	Tests
6	4	Electronic Mail (SMTP, POP)	Electronic Mail (SMTP, POP)	Lecture and lab	Tests
7	4	Learn about DHCP, DNS, SNMP	DHCP, DNS, SNMP	Lecture and lab	Tests
8	4	Learn about SSH, Telnet, BGP, RIP	SSH, Telnet, BGP, RIP	Lecture and lab	Tests
9	4	Learn about Transport Layer Protocols	Transport Layer Protocols	Lecture and lab	Tests
10	4	Learn about Congestion Control , Flow Control	Congestion Control , Flow Control	Lecture and lab	Tests
11	4	Learn about End to End Protocols (UDP)	End to End Protocols (UDP)	Lecture and lab	Tests
12	4	Learn about TCP, RPC	TCP, RPC	Lecture and lab	Tests
13	4	Learn about Network Layer Protocols Routing Algorithms	Network Layer Protocols Routing Algorithms	Lecture and lab	Tests
14	4	Learn about Flooding, Shortest path routing	Flooding, Shortest path routing	Lecture and lab	Tests

15	4	Learn about Distance Vector routing	Distance Vector routing	Lecture and lab	Tests
16	4	Learn about Link Sate routing	Link Sate routing	Lecture and lab	Tests
17	4	Learn about Hierarchical routing	Hierarchical routing	Lecture and lab	Tests
18	4	Learn about Broadcast and multicast routings	Broadcast and multicast routings	Lecture and lab	Tests
19	4	Learn about Routing in the Internet	Routing in the Internet	Lecture and lab	Tests
20	4	Learn about Path Vector routing	Path Vector routing	Lecture and lab	Tests
21	4	Learn about OSPF routing	OSPF routing	Lecture and lab	Tests
22	4	Learn about EIGRP routing	EIGRP routing	Lecture and lab	Tests
23	4	Learn about IPv4 , IPv6, IPsec	IPv4 , IPv6, IPsec	Lecture and lab	Tests
24	4	Learn about ICMP , IGMP	ICMP , IGMP	Lecture and lab	Tests
25	4	Learn about control and flow control algorithms	Data Link Layers , Error control and flow control algorithms	Lecture and lab	Tests
26	4	Learn about ARP, L2TP, PPP	ARP, L2TP, PPP	Lecture and lab	Tests
27	4	Learn about MAC (Ethernet, DSL, ISDN, FDDI).	MAC (Ethernet, DSL, ISDN, FDDI).	Lecture and lab	Tests
28	4	Learn about STP	STP	Lecture and lab	Tests
29	4	Learn about CSMA/CD	CSMA/CD	Lecture and lab	Tests
30	4	Learn about Check Sum algorithms	Check Sum algorithms	Lecture and lab	Tests

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Digital Communications Fundamentals and Applications, by Bernard Sklar, Prentice Hall, USA. [2] Communication Systems, by Simon Hyakin, Wiley, USA. [3]Modern Digital and Analog Communications Systems, by B. P. Lathi, Oxford University, England. [4] Digital Communications, by Ian A. Glover and Peter M. Grant, Prentice Hall, England. [5] Digital Communication, by Andy Bateman, Prentice Hall, USA. [6] Communication Systems an Introduction to Signals and Noise in Electrical Communication, by A. Bruce Carlson, et at, McGraw-Hill, USA
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

				A 1	**A 2**	**A 3**	**A 4**	**B 1**	**B 2**	**B 3**	**B 4**	**C 1**	**C 2**	**C 3**	**C 4**	**D 1**	**D 2**	**D 3**	**D 4**
	4CT EC1			*	*	*	*	*	*	*		*	*	*	*	*	*	*	*
	4CT EC2																		
	4CT EC3			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	4CT EC4			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	4CT EC5			*	*	*	*	*	*	*	*		*	*	*	*	*	*	*
	4CT EC6			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	4CT EC7			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

1. Teaching Institution	AlKafeel University
2. University Department/Centre	Computer technics engineering
3. Course title/code	Information theory and Coding/ CTEE6
4. Programme (s) to which it contributes	BSC
5. Modes of Attendance offered	Fulltime
6. Semester/Year	Annually
7. Number of hours tuition (total)	120 h
8. Date of production/revision of this specification	30/5/2021

9. Aims of the Course

- Management of the basic components of the information system used in computer networks, according to Shannon's theory.
- Evaluate what the sources possess of information or redundant information and determine their efficiency by mathematical methods.
- Distinguish the difference between continuous and discontinuous information channels, and master the method of calculating their capacities.
- Gain detailed and applied knowledge about the basic types of source coding, and the method for calculating their efficiency.
- Gain detailed knowledge of the basic types of channel coding and ways to detect and correct errors in it.
- Gaining basic knowledge to avoid the main sources of channel errors, and to reduce their impact as much as possible.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A - knowledge and understanding

A1- Proficiency in applying the basics of necessary probability theory.
A2- Understand information theory and its foundations as it was developed and established (Shannon)
A3- Studying and applying a measure of the degree to which the sources possess information.
A4- Studying and applying the basics of continuous and discontinuous information channels and methods of calculating their capacities.
A 5 - Study and application of sources coding methods.

A6 - Studying and applying channels coding methods for the purposes of detecting/correcting errors, and linking them to the practical side of computer networks.

B- Subject-specific skills
B1 - Basic skills of mathematics and probability theory.
B 2 - basic skills of communication science.
B 3 - Basic skills to work on the program (matlab)

Teaching and Learning Methods

1- Explanation and clarification (lecture).
2- Presentation of selected models of explanatory questions and their solutions.
3- Self-learning method (assigning students to complete learning some skills after giving them the basics).

Assessment methods

1- Theoretical presentation of the curriculum vocabulary through the use of some general engineering principles, which lead to the analysis and design of the engineering problem, in addition to using the laws and rules of control engineering. (Get A1-A5 from Paragraph 9)
2- Class group discussions of practical examples of control systems. (Get A1 from Paragraph 9)
3- Laboratory application of the curriculum vocabulary using computer programs to represent and analyze systems, such as the Matlab program (obtaining B1-B4 from paragraph 9)

C. Thinking Skills
1- An achievement test and home and class assignments to know the student's knowledge base to verify A2-A5 of paragraph 9.
2- The discussion test to verify A1 of paragraph 9.
3- Laboratory test to verify B1-B4 of paragraph 9.

Teaching and Learning Methods

To reach C1-C2 of Paragraph 9, the student is assigned to address a practical engineering problem related to control engineering, and during his study period, he presents appropriate solutions to analyze the origin of the problem, follow the theories and rules used to solve it, and present the results of the analysis and solutions and its economic and social impact.

A1- He understands the requirements of the engineering profession and ethical responsibility in addition to the need for lifelong learning and the ability to engage in it.

B2- Understand the impact of engineering solutions on economic activities.

Assessment methods

C1 - Students are tested orally and practically periodically to determine the extent of their comprehension of the scientific theories proposed.

C2 The results are presented in class to be discussed and the rest of the students participate in the discussion.

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

D1- Building ideas and communicating them effectively orally and in writing.
D2 - Time management and work within deadlines.
D3 - Participate constructively in groups.
D 4- Searching for information and using information technology.
D5 - Develop the student's leadership skill.
D6 - Develop the student's mental fitness during the lecture by constantly directing questions.
D7 - Developing mathematical computational skills and in the field of probability theory.

D8 - Develop the student's language skills to increase the ability to express his ideas.
D9- Developing the students’ programming skills in the language of the MatLab

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	The student should be able to understand control systems and methods of representing and analyzing them.	Review of related probability and statistics related topics. definition of Alphabet , Definition of random variable.	A theoretical presentation using illustrative diagrams and some general engineering principles	achievement test + class assignment
2	4		Definition of joint probability , Conditional probabilities and Bayes rule Independence of two random variables .Venn's diagram.	A theoretical presentation using the laws and rules of probability	achievement test + class assignment
3	4		Model of information transmission system. Common sense definition of information .Logarithmic measure of information. Self-information.	Understanding sense of information	achievement test + class assignment
4	4		Definition of information for	A theoretical presentation using the laws	achievement test + class assignment

			noisy channel .Posteriori probabilities Average mutual information for noisy channel.	and rules of channels	
5	4	Learning how to describe information channel	Shannon representation diagram of information source. Parameters of discrete channel.	The student should be able to understand the impact of the work of the controllers on the control systems.	achievement test + class assignment
6	4	Having ability to compute entropy for info. Source	Average information (entropy) of a discrete and continuous source, maximum source entropy. Source efficiency.	A theoretical presentation using the laws and rules of control engineering.	achievement test + class assignment
7	4	Ability to describe information channel by transition matrix	Transition probability matrix of channel, discrete noiseless and noisy channel models, uniform channel. Ternary symmetric channel.		achievement test + class assignment
8	4	Understanding BSC and TSC	Information transmission over symmetric channel, noiseless channel, binary symmetric channel, ternary symmetric channel.	The student should be able to analyze the balance of control systems and the ability to analyze the	achievement test + class assignment

				performance of the system in the time and frequency range. And that the student is able to design the control system.	
9	4	Understanding special cases in Binary channels	Memory and memory less information channels .Binary Erasure channel (BEC).		achievement test + class assignment
10-11	8	Having ability to calculate capacity ,efficiency for Symmetric channel	Capacity of discrete channel, channel capacity for noiseless channel. Channel efficiency and redundancy. Channel capacity for symmetric channels.	The student should be able to analyze the balance of control systems and the ability to analyze the performance of the system in the time and frequency range. And that the student is able to design the control system.	achievement test + class assignment
12	4	Theoretical presentation	Channel capacity for nonsymmetrical channels .binary nonsymmetrical channel.		achievement test + class assignment
13	4	Understanding continuous	Mutual information of		

		information channel with Gaussian noise distribution .	continuous channel. Capacity of continuous channels. Efficiency and redundancy of continuous channel.		
14	4	Learning relation between Shannon-Hartly formula and Nyquist theorem .	Entropy for continuous uniform distribution source. Entropy for continuous Gaussian distribution source.		
15-16	8	Learning how to compute capacity for continuous channel	Sampling of continuous source .Sampling Theorem. Nyquist theorem for transmission over band limited continuous channel. Shannon-Hartly channel capacity 4theorem.		
17	4	Learning how to deal with channels when cascaded	AWGN channel model (capacity ,bandwidth ,S/N ratio) .		

18	4	Understanding basics of source coding types	Cascaded information channels .Parallel information channels.		
19	4	Understand and apply	Source encoding; fixed and variable length codes. Prefix property .Average length of source code. Source code efficiency and redundancy.		
20	4	Understand and apply	tree coding method.		
21 - 24	16	Understand and apply	Shannon – Fano coding method.		
27-30	16	Understand why we need channel coding ,and basic types	Huffman Coding. Hamming distance.		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Data Communications and Networking \McGraw-Hill \Forouzan Networking Series \by Behrouz A. Forouzan\Copyright © 2007 by The McGraw-Hill Companies, Inc. ELEMENTS OF INFORMATION THEORY\Second Edition \THOMAS M. COVER & JOY A. THOMAS \ Second

	Edition\Copyright© 2006 by John Wiley & Sons
Special requirements (include for example workshops, periodicals, IT software, websites)	Matlab
Community-based facilities (include for example, guest Lectures , internship , field studies)	A number of electronic references and a number of specialized websites. A number of electronic references and a number of specialized websites. Google books

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel university
2. University Department/Centre	computer technology engineering
3. Course title/code	Mobile communication/3CTEE6
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	annual
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30/5/2021
9. Aims of the Course	
Article aims to study the cellular mobile communication systems of all generations, the student and the study of the internal structure of cells and coverage of the communication process.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
E- Knowledge and Understanding A1. Understand the types of mobile communication systems and their generations A2. Understand the mechanism of cellular communication between the devices and the deployment of sites and towers as planned according to population density A3. Aware of the mechanism of transfer of information between the devices and the signal with the ground station and to the main Almarko of the company. A4. Aware of the mechanism of the spread of reference microwave and a mechanism for selecting the frequency and volume of information transmitted through it.
B. Subject-specific skills B1. Methods of transfer of the signal and the information known through cellular devices and ground stations B2. Designs microwave stations to transmit the signal B3. Designed to map the distribution of ground stations Towers
Teaching and Learning Methods

1. Theoretical lectures in the classroom and practical in the laboratory
2. Involve the student in designing the micro communication towers and writing the software part
3. Laboratory application using computer programs and discussion of the results

Assessment methods

1. Test grades and classroom and home assignments to learn the knowledge base of the student to check A2-A4 of paragraph 10
2. Test the discussion to verify the A of paragraph 10
3. 3-testing laboratory to verify the B1 to B3 of paragraph 10

C. Thinking Skills

C1. Understand the requirements of the engineering profession and ethical responsibility, in addition to the need for lifelong learning and the ability to engage in it.

C2. Understand the impact of engineering solutions on economic activities.

Teaching and Learning Methods

In order to reach C1-C2 of Paragraph 10, the student is assigned to address a practical engineering problem related to the Controllers, and during his study period, he presents appropriate solutions to analyze the origin of the problem, follow the theories and rules used to solve it, present the results of the analysis and solutions, and their economic and social impact

Assessment methods

To verify C1-C2, the results are presented in class to be discussed and the rest of the learners participate in the discussion.

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

D1. The ability to identify, formulate and solve engineering problems.

D2. The ability to design and conduct experiments and analyze and interpret results.

D3. The ability to use modern engineering techniques and skills and tools necessary to practice the engineering profession.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-3	6	Understand the different types and generations of mobile systems	Introduction to Wireless Communication System: Evolution of mobile communications, Mobile Radio System around the world, Types of Wireless communication System, Comparison of Common wireless system, Trend in Cellular radio and personal communication, Second generation (2G) systems. Evolved Second-Generation Systems (2.5G). Third-Generation (3G) Systems. Fourth-Generation (4G)	Presentation of slides and illustrations of the types and generations of mobile communication systems and their uses	daily test

			Systems. Fifth-Generation (5G) Systems		
7-4	8	Identify the types of base stations, their distribution method, and methods of choosing frequen.cies	The Cellular Concept-System Design Fundamentals: Cellular system, Hexagonal geometry cell and concept of frequency reuse, Channel Assignment Strategies Distance to frequency reuse ratio, Cha\nnel & cochannel interference reduction factor, S/I ratio consideration and calculation for Minimum Co-channel and adjacent interference, Handoff Strategies, Umbrella Cell Concept	Clarify the mechanism for extracting the frequencies of the base stations for the users and how to use these frequencies and ways to redistribute them on the network	daily test
8-11	8	Calculating the	Traffic Engineering:	Clarify the mechanism	monthly exam

		volume of information transmitted through the base stations and how to get the best results	Trunking and Grade of Service, Improving Coverage & Capacity in Cellular System-cell splitting, Cell sectorization	and volume of information transmitted between devices and base stations, and calculate mathematical laws to obtain the required results	
12-15	8	Design microwave stations	Large scale path loss: Free Space Propagation loss equation, Path-loss of NLOS and LOS systems, Reflection, Ray ground reflection model, Diffraction, Scattering, Link budget design,	Explain, clarify and perform the calculations required for the work of microwave stations, taking into account the standards, signal strength and the possibility of changing temperatures and rain	daily test
16-18	6	Calculating the	Small scale multipath	Calculating the	monthly exam

		microwave signal propagation by designing a station using the Pathloss4.0 program	propagation: Impulse model for multipath channel, Delay spread, Feher's delay spread, upper bound Small scale, Multipath Measurement parameters of multipath channels, Types of small scale Fading, Rayleigh and Rician distribution	microwave signal propagation by designing a station using the Pathloss4.0 program	
19-22	8	The importance of modulating and transfer methods	Modulation Techniques for Mobile Radio: Review for basic digital modulation techniques, QPSK,MSK,GMSK Multiple Access Techniques: Frequency Division Multiple Access (FDMA). Time Division Multiple	Learn about the types of signal modulating and learn about the methods of using transmission through FDMA, TDMA or CDMA and the benefits of each	test

			Access (TDMA). Spread Spectrum Multiple Access. Space Division Multiple Access (SDMA)	method and how to use it	
23-28	12	Identify the protocols and the mechanism of action of each layer of these protocols with the importance of recognizing the differences between the systems	Wireless Systems: GSM system architecture, Radio interface, Protocols, Localization and calling, Handover, Authentication and security in GSM, GSM speech coding, Concept of spread spectrum, Architecture of IS-95 CDMA system, Air interface, CDMA forward channels, CDMA reverse channels, Power control in CDMA, cellular technology, GPRS system	Explain and clarify the types of protocols used in mobile communication systems and clarify the difference between GSM, and CDMA and the architecture of each type	test

			architecture		
29-30	4	Practical application using some of these systems by transferring information between devices	Recent trends: Wi-Fi, WiMAX, ZigBee Networks, Software Defined Radio, UWB Radio, Wireless Ad-hoc Network and Mobile Portability, Security issues and challenges in a Wireless network.	Addressing other types of systems and the benefits and problems of each type and its mechanism of action	test

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Wireless communications principles and practice 2-WIRELESS COMMUNICATIONS AND NETWORKING 3-Wireless and Cellular Telecommunications
Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions

Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Alkafeel University
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Multimedia Computing / 4CTEC5
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	mandatory
6. Semester/Year	Year
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
Learning student with engineering specializations and knowledge about multimedia elements concepts and practical applications which using them at the present time.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods.

A- Knowledge and Understanding

A1. The ability to deal with multimedia elements.
A2. The ability to design, formulate, solve theoretical programs and implement them in practice.
A3. The ability to receive enough information to pursue their scientific qualification.
A4. Ability to work in applied fields.

B. Subject-specific skills

B1. Providing the student with engineering specializations with knowledge about multimedia concepts.
B2. Participation and success in their professional lives as a result of hands-on training.
B3. Capability to collaborate in a multidisciplinary team.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods

Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.

D2. Try to support and improve the ability of most talent students.

D3. Try to improve a lower-level students.

D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hrs	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	4	Learn what multimedia is.	Introduction to Multimedia.	Lecture and lab	exams and quizzes
2nd	4	Learn what are the Hyper Text and Hyper Media.	Hyper Text and Hyper Media.	Lecture and lab	exams and quizzes
3rd	4	Learn what the five Components of Multimedia are.	Components of Multimedia.	Lecture and lab	exams and quizzes
4th	4	Have a acknowledgement about the topics and projects in Multimedia fields.	Multimedia Research Topics and Projects.	Lecture and lab	exams and quizzes
5th	4	Learn about the most popular Multimedia applications such as the Internet and e-learning	Multimedia applications.	Lecture and lab	exams and quizzes
6th	4	Learn about the using of Multimedia on the web.	Multimedia on the web.	Lecture and lab	exams and quizzes
7th	4	Learn about Multimedia Data Basics and there specifications.	Multimedia Data Basics	Lecture and lab	exams and quizzes
8th , 9th	8	Investigating various types of graphics and images, as well as how they represent data.	Graphics and Image Data Representation	Lecture and lab	exams and quizzes

10th	4	Investigating how to digitizing various types of graphics and images	Image digitization.	Lecture and lab	exams and quizzes
11th	4	Studying the Spatial resolution and quantization of images.	Spatial resolution and quantization.	Lecture and lab	exams and quizzes
12th	4	Investigating various types of images which used Widely.	Type of image	Lecture and lab	exams and quizzes
13th	4	Investigating various Widely used types of images like jpg, gif, …etc..	Image file formats	Lecture and lab	exams and quizzes
14th	4	Studying how to perform arithmetic operations on images such as addition and subtraction… etc.	Arithmetic operation on image	Lecture and lab	exams and quizzes
15th	4	Studying how to perform logical operations on images such as AND, OR … etc.	Logical operation on image	Lecture and lab	exams and quizzes
16th	4	Studying the histogram of Image. How to draw it and how to use it.	Image histogram	Lecture and lab	exams and quizzes
17th	4	Learning about modification and equalization of image's Histogram.	Histogram modification and Histogram equalization.	Lecture and lab	exams and quizzes

18th, 19th	8	Learning about the techniques used in compression of Image.	Image compression techniques	Lecture and lab	exams and quizzes
20th	4	Investigating the Basics of Sound and Audio and their frequencies.	Sound and Audio Basics	Lecture and lab	exams and quizzes
21th	4	Studying how to Digitization the sound signals.	Digitization of sound	Lecture and lab	exams and quizzes
22th	4	Studying the Nyquist theorem which used in sampling of sound signals.	Nyquist theorem	Lecture and lab	exams and quizzes
23th	4	Studying the Synthetic sound like MIDI and when they used.	Synthetic sound	Lecture and lab	exams and quizzes
24th	4	Studying the theory of Quantization and transmission of Audio signals.	Quantization and transmission of Audio		
25th	4	Studying the different types of Compression of audio signals.	Compression of audio		
26th	4	Investigating the concepts of video and its basics.	Video Basics		
27th	4	Investigating the different color systems used in	Video color models		

		video like RGB, CMYK,…etc.			
28th	4	Studying the many types of video signals and the differences between them.	Type of video signals		
29th	4	Studying the different types of Compression video.	Video compression		
30th	4	Investigating the using of Multimedia over networks	Multimedia over networks		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1] Fundamentals of Multimedia, Ze-Nian Li, Mark S. Drew Prentice Hall, 2004Communication, by A. Bruce Carlson, et at, McGraw-Hill, USA. 2] Digital Image Processing Using MATLAB, Rafael C. Gonzalez, Richard E. Woods, and Steven L. Eddins, Prentice Hall, 2004. 3] Digital video processing, A. M. Tekalp, Prentice Hall, 2005. 4] The data compression book, Mark Nelson, Imprint: M & T Books, Publisher: IDG Books Worldwide, Inc., January 1, 1991.
Special requirements (include for example workshops, periodicals, IT software, websites)	Many of electronic references and a some of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions

Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	Al-Kafeel University
2. University Department/Centre	computer technology engineering
3. Course title/code	Project management /4CTEC1
4. Programme (s) to which it contributes	Bachelor
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	2021 / 05 / 30
9. Aims of the Course	
Providing the student with engineering specializations with knowledge about project management concepts and research applications	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1- The student knows when he needs to manage the project. A2- The student will be acquainted with the planning, design and management of engineering projects A3- The student learns how to calculate the cost and timeline of the project. A4- The student describes the implementation of the project
B. Subject-specific skills B1 - The student acquires the skill of planning, designing and managing engineering projects. B 2 - The student acquires the ability to deal skillfully, distribute tasks to departments within the project, manage risks, cost, procurement, quality and time.

B 3 - The student acquires the skill of communication between employees and departments, and control over work and all its stages, until the completion and delivery of the project.

Teaching and Learning Methods

The main learning strategy is the interactive method between the lecturer and students during the class. Also, answer all questions which are sent by email. In addition to guide students to the best and most up-to-date websites and resources. A new lecture is uploaded to the electronic learning platform before it is given to students so that they can look at it and have a glance beforehand. The lecture is designed and presented by using Microsoft PowerPoint slides, as well as the electronic and smart screens.

Assessment methods

Test students to see how much they have been interacting during the class. Also, assessment can be achieved by doing tests for students weekly and monthly, and in two different manners: oral and written tests.

C. Thinking Skills

C1. Learn to be a precision and follow what you have been asked to do while getting knowledge and science.
C2. Learn interaction during the class.
C3. Learn how to love the science and make the most use of it.
C4. Learn how to love the research and pick up the useful information from a trusted resource.

Teaching and Learning Methods

Given theoretical and practical lectures based on different and robust resources.

Assessment methods
Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.
D2. Try to support and improve the ability of most talent students.
D3. Try to improve a lower-level students.
D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st,2nd	8	Project management concept	Project management	Lecture and lab	The Exams
3rd,4th	8	Learn about economics and management for engineers	Economics and management for the engineers	Lecture and lab	The Exams
5th, 6th	8	Learn about factory and workshop design	Layout of factories and workshops	Lecture and lab	The Exams
7th	4	Get to know your productivity	Productivity	Lecture and lab	The Exams
8th, 9th	8	Learn about engineering project drawing	Networks	Lecture and lab	The Exams
10th, 11th	8	Learn about the critical path method in project management	Critical path method(CPM)	Lecture and lab	The Exams
12th , 13th ,14th,15th	16	Familiarity with Albert technology (time and cost)	Pet technique (Time and cost)	Lecture and lab	The Exams
16th	4	Recognize resource allocation problems	The resource allocation problems	Lecture and lab	The Exams
17th, 18th	8	Understand the concept of linear equations (formal method, simple method)	Linear programming (graphical method, simplex method)	Lecture and lab	The Exams

19th, 20th,21th	12	Understand the concept of warehousing and its types	Inventory models(Economic order quantity)(EOQ)	Lecture and lab	The Exams
22 th	4	Understand the concept of break-even point in project management	The break-even point	Lecture and lab	The Exams
23 th ,24 th	8	Know the cost of inventory	The cost of inventory	Lecture and lab	The Exams
25 th,26 th, 27 th	12	Understand the concept of maintenance policy and its concepts	Maintenance policy and concepts	Lecture and lab	The Exams
28 th , 29 th	8	Learn about quality control	Quality control	Lecture and lab	The Exams
30 th	4	Understand the concept of employer management	Employer management	Lecture and lab	The Exams

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	(1) Y. Bakouros and V. Kelessidis "Project management" INNOREGIO: dissemination of innovation and knowledge management techniques, January 2000. [2] J.R. Meredith and S.J. Mantel "Project Management", J. Wiley & Sons, 1995 [3] S. Choudhury "Project Management", Tata McGraw Hill – 2003 [4] Principles of Project Management, NPC publication

Special requirements (include for example workshops, periodicals, IT software, websites)	A number of electronic references and a number of specialized websites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150

1. Teaching Institution	University of Alkafeel
2. University Department/Centre	Department of Computer Techniques Engineering
3. Course title/code	Security of Computer and Networks/ 4CTEC2
4. Programme (s) to which it contributes	Bachelor Degree
5. Modes of Attendance offered	Compulsory
6. Semester/Year	Yearly
7. Number of hours tuition (total)	120
8. Date of production/revision of this specification	30 / 05 / 2021
9. Aims of the Course	
Teach students the fundamental concepts about the methods that use to protect data and computer networks	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods
A- Knowledge and Understanding A1. Understand information security and computer network. A2. Understand the main goals to protect information, data, and computer devices from hackers. A3. Understand the simple and traditional cipher techniques, and how the cipher science has been established. A4. Understand the modern cipher techniques which are still using in data security and networking.
B. Subject-specific skills B1. Understand the development in data security and networking though a comparison between the traditional and modern techniques of cipher and decipher. B2. Use the MATLAB programming as a practical tool to apply the cipher and decipher for traditional and modern techniques.

B3. The ability to create a set of protection mechanisms for personal use at least. Use same, different, or mixed cipher and decipher keys. In addition to different protocols.

Teaching and Learning Methods

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Teaching and Learning Methods

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Assessment for students is achieved by doing tests weekly and monthly, and in two manners: oral and written tests.

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

D1. Focus on most intelligent students.
D2. Try to support and improve the ability of most talent students.
D3. Try to improve a lower-level students.
D4. Track the performance of weak students during the academic year and understand their problems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3rd	12	Understand the fundamental concepts about security and network. In addition to the most commonly used terms to enable students to understand the lectures as well as any other resources they might pick it up	**Introduction, Symmetric Ciphers model: plaintext, encryption algorithm, secret key, cipher text, decryption algorithm, A Model of conventional encryption. Cryptography , Cryptanalysis, block and stream cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
4th	4	Understand the simplest cipher and decipher techniques, with their characteristics and drawbacks	**Caesar Cipher The affine Cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
5th , 6th	8	Used most sophisticated cipher techniques as compared with	**Mono alphabetic substitution ciphers, Shift ciphers**	Lecture and computer laboratory	Test, homework, interacting during the class

		the traditional techniques.			
7th	4	Enable the use of Array in cryptography	**Hill cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
8th	4	Use look up table as circle to highlight key and plain/ cipher texts	**Playfair cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
9th	4	Use more complex key to do the encryption and decryption	**Polyalphabetic ciphers Vigenere cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
10th	4	Divide plaintext into a set of blocks by changing the position of the original plaintext rather than changing the actual characters.	**The Transposition cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
11th	4	Use Two keys in cryptography as a preparing to introduce the stream cipher	**Affine cipher**	Lecture and computer laboratory	Test, homework, interacting during the class
12th	4	Use key as a set of bits (zeros, ones) which are generate as randomly.	**One-time pad**	Lecture and computer laboratory	Test, homework, interacting during the class

13th, 14th, 15th	12	Use one key to encrypt and decrypt a text	**Cryptanalysis of a Symmetric key**	Lecture and computer laboratory	Test, homework, interacting during the class
16th	4	Use Greater Common Division between two integer numbers	**Euclid's Algorithm**	Lecture and computer laboratory	Test, homework, interacting during the class
17th, 18th, 19th	12	Modern cryptography includes the use of DES technique which is still use the private key protocol	**SYMMETRIC-KEY ALGORITHMS -DES—The Data Encryption Standard, hers -16 round Feistel system**	Lecture and computer laboratory	Test, homework, interacting during the class
20th, 21st	8	Use two different keys: public key for encryption, and private key for decryption such as RSA algorithm	**PUBLIC-KEY ALGORITHMS, -RSA, -Other Public-Key Algorithms,**	Lecture and computer laboratory	Test, homework, interacting during the class
22nd, 23rd, 24th, 25th	16	Authentication protocol based public key, private key and distribution key	**AUTHENTICATION PROTOCOLS, - Authenticatio**	Lecture and computer laboratory	Test, homework, interacting during the class

			n Based on a Shared Secret Key, -Establishing a Shared Key: The Diffie - Hellman Key Exchange, - Authenticatio n Using a Key Distribution Center, - Authenticatio n Using Kerberos, - Authenticatio n Using Public-Key Cryptography ,		
26th, 27th	8	OSI security architecture, network security, email security and privacy	**OSI security Architecture, a model for network security, EMAIL SECURITY - PGP—Pretty Good Privacy, S/MIME**	Lecture and computer laboratory	Test, homework, interacting during the class

28th, 29, 30th	12	OS security, database protection, deep network protection services such as IP, VPN, etc.	**Protocols of computer networks PROTECTION SERVICES: OS protection service: protected objects and methods of OS protection, security of OS, memory and addressing protection, fence protection Database protection service: Network protection service: IP and E-Commerce protection, VPN and next generation networks protection**	Lecture and computer laboratory	Test, homework, interacting during the class

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	[1] Cryptography and Network Security, 7th Edition [2] Handbook of Applied Cryptography [3] Defensive Security Handbook: Best Practices for Securing Infrastructure [4] Network Monitoring and Analysis: A Protocol Approach to Troubleshooting [5] Network Security Essentials :Application And Standards, 6Th Edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Set of electronics resources and some specialized websites
Community-based facilities (include for example, guest Lectures , internship , field studies)	Workshops, internships

13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	150