

وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكلية والمعاهد

الجامعة : الكوفة
الكلية/المعهد: الهندسة
القسم العلمي : الهندسة الالكترونية والاتصالات
تاريخ ملء الملف : 12-6-2021

التوقيع :
اسم معاون العلمي :
التاريخ :

التوقيع :
اسم رئيس القسم : أ.م.د. بهاء قاسم الموسوي
التاريخ : 12-6-2021

دقق الملف من قبل
شعبة ضمان الجودة والأداء الجامعي
اسم مدير شعبة ضمان الجودة والأداء الجامعي:
التاريخ
التوقيع

مصادقة السيد العميد

Republic of Iraq
Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University: Kufa
Faculty : Engineering
Department: Electronics & Communication
Date of Form Completion: 12-6-2021

Signature:

Signature :

Assist. Prof. Dr. Bahaa Qasim Al-Musawi
Head of Department :

Dean's Assistance for Scientific Affairs

Date : 12 / 6 / 2021

Date : / / 2021

Quality Assurance and University Performance Manager

Signature:

Date : / / 2021

Approved by...

Dean Name:

Signature:

Date : / / 2021

Programme Specification

The educational program description provides a brief description of the program characteristics and expected program outcomes achieved by the students upon graduation. The program outcomes will be based on course learning outcomes, which will be described also.

1. Teaching Institute	University of Kufa – Faculty of Engineering
2. University Department / Center	Electronics & Communication Engineering Department
3. Program Title	B. Sc. in Electronics & Communication Engineering
4. Title of Final Award	B. Sc. in Electronics & Communication Engineering
5. Models of Attendance Offered	Annual Educational System
6. Accreditation	ABET
7. Other External Influences	None
8. Date of production/ revision of this specification	2020-2021
9. Aims of the program	
i- Use technical, teamwork, and communication skills, along with leadership principles, to pursue Electronics & Communication engineering careers in areas such as Microelectronics , Optical communication, Mobil, Interface, Renewable Energy , Computer architecture ,Telecommunication and Artificial Intelligent.	
ii- Pursue graduate degrees in Electronics & Communication engineering and other fields.	

iii- Function ethically in their professional Electronics & Communication engineering roles.

iv- Pursue professional licensure.

v- Engage in life-long learning through independent study and by participating in professional conferences, workshops, seminars, or continuing education.

10. Learning Outcomes, Teaching and Learning and Assessment methods.

(The same as ABET Student Outcomes from a to k)

A-Program Outcomes – Knowledge

A1- An ability to apply knowledge of mathematics, science and engineering (*a in ABET Student Outcomes*).

A2- An ability to design and conduct experiments, as well as to analyze and interpret data (*b in ABET Student Outcomes*).

A3- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (*c in ABET Student Outcomes*).

A4- An ability to identify, formulate, and solve engineering problems (*e in ABET Student Outcomes*).

A5- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (*h in ABET Student Outcomes*).

A6- A knowledge of contemporary issues (*j in ABET Student Outcomes*).

B-Subject-specific skills

B1- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (*k in ABET Student Outcomes*).

C-Thinking skills

C1- An understanding of professional and ethical responsibility (*f in ABET Student Outcomes*).

C2- A recognition of the need for, and an ability to engage in life-long learning (*i in ABET Student Outcomes*).

D- Program Outcomes – General and transferable skills (other skills relevant to employability and Personal development)

D1- An ability to function on multidisciplinary teams (*d in ABET Student Outcomes*).

D2- An ability to communicate effectively using written, oral and visual methods of communication (*g in ABET Student Outcomes*).

Teaching and Learning Methods

Mentioned in Course Portfolios

Assessment Methods

Mentioned in Course Portfolios in addition to surveys done to senior students and employers.

11. Program Structure

No.	Level/ year	Course or Module Code	Course or Module Title	Credit rating	Hours		
					Contact	Tutorial	Prac
1	First/ First	U101	English	1	1	1	0
2		U102	Arabic Language	0	2	0	0
3		ECE101	Single Variable Calculus I	7	4	5	0
4		ECE110	IT I	1	1	0	1
5		ECE103	Hands-On Introduction to Electronics Engineering Lab Skills	3	1	2	2
6		ECE109	Hardware Programming with Python	7	4	2	4
1	First/ Second	ECE105	Circuits and Electronics	6	4	4	
2		ECE106	Electricity and Magnetism	4	3	2	0
3		ECE107	Design and Manufacturing	3	2	1	3
4		ECE108	Circuits and Measurements Laboratory	4	2	1	4
5		U103	Human Rights and Democracy	0	2	0	0
6		U104	English	1	1	1	0
1	Second/ First	ECE201	Calculus II (Multivariable Calculus)	6	4	4	0
2		GS201	The Scientific Method - Critical and Creative Thinking	1	1	1	0
3		ECE203	Practical Programming in C	3	2	1	2
4		ECE204	Microelectronic Devices and Circuits	6	4	3	0
5		ECE206	Computation Structures	5	4	0	2
6		U201	English	1	1		0
1	Second/ Second	ECE202	Calculus III (Linear Algebra)	5	4	3	0
2		ECE205	Signals and Systems	5	4	2	0

3		ECE207	Introductory Analog Electronics Laboratory	6	4	2	4
4		ECE208	Practical Programming in MATLAB	3	2	1	2
5		U202	English	1	1	1	0
1		ECE301	Probabilistic Systems Analysis and Applied Probability	5	4	2	0
2		ECE302	Electromagnetics and Applications	6	4	3	0
3		ECE305	Digital Communication Systems	6	4	4	0
4	Third/ First	ECE306	Computer System Architecture	6	4	3	0
5		U301	English	1	1	1	0
1		ECE303	Receivers, Antennas, and Signals	5	4	3	0
2		ECE307	Introductory Digital Systems Laboratory	7	4	2	4
3	Third/ Second	ECE308	Introductory Communication Systems Laboratory	8	4	3	4
4			English	1	1	1	0
1		ECE401	Engineering Project	7	5	0	5
2		ECE402	Power Electronics	4	2	3	2
3	Fourth/ First	ECE410	Optical Signals, Devices, and Systems	4	2	3	2
4		ECE408	Management in Engineering	2	2	0	0
5		U401	English	1	1	0	0
1		ECE401	Engineering Project	8	6	0	8
2		ECE403	Computer Networks	4	2	3	2
3	Fourth/ Second	ECE412	Introduction to mobile communication	4	2	3	2
4		U402	English	1	1	1	0

Credit units =159

1. Admission

Minimum number of students = 430

Maximum number of students=560

2. Planning for Personal Development

There is training of faculty members in writing of program learning outcomes

3. Admission criteria:

The submission to the program and acceptance of students are central from ministry of Higher Education and Scientific Research.

4. Key sources of information about the program

The program has Industry Advisory Committee IAC which is composed of professional engineers from industry. IAC has two meeting each year discussing different issues related to the program.

Curriculum Skills Map

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Courses				Program Learning Outcomes (ABET Student Outcomes)											
Year/ Level	Course Code	Course Title	Core (C)Title or Option (O)	Knowledge and understanding						Subject - specific skills	Thinking skills		General and transferable skills (or)other skills relevant to employability and Personal development		
				A1 (a)	A2 (b)	A3 (c)	A4 (e)	A5 (h)	A6 (j)		B1 (k)	C1 (f)	C2 (i)	D1 (d)	D2 (g)
First	U101	English	Core												✓
	U102	Arabic Language	Core												✓
	ECE101	Single Variable Calculus I	Core	✓											
	ECE110	IT I	Core							✓					
	ECE103	Hands-On Introduction to Electronics Engineering Lab Skills	Core												
	ECE109	Hardware Programming with Python	Core							✓					
	ECE105	Circuits and Electronics	Core	✓	✓	✓	✓								
	ECE106	Electricity and Magnetism	Core	✓	✓	✓	✓								

[illegible]

Third	ECE301	Probabilistic Systems Analysis and Applied Probability	Core	✓	✓	✓	✓							
	ECE302	Electromagnetics and Applications	Core	✓	✓	✓	✓							
	ECE305	Digital Communication Systems	Core	✓	✓	✓	✓							
	ECE306	Computer System Architecture	Core							✓				
	U301	English	Core											✓
	ECE303	Receivers, Antennas, and Signals	Core	✓	✓	✓	✓							
	ECE307	Introductory Digital Systems Laboratory	Core	✓	✓	✓	✓							
	ECE308	Introductory Communication Systems Laboratory	Core	✓	✓	✓	✓							
	U302	English	Core											✓
Fourth	ECE401	Engineering Project				✓	✓	✓	✓		✓	✓	✓	✓
	ECE402	Power Electronics	Core	✓	✓	✓	✓							
	ECE410	Optical Signals, Devices, and Systems	Core											
	ECE408	Management in Engineering	Core	✓			✓				✓			
	U401	English	Core											✓
	ECE401	Engineering Project	Core			✓	✓	✓	✓		✓	✓	✓	✓
	ECE403	Computer Networks	Core							✓				

[illegible]

Stage	First			Theory	6	Hrs./Week
Subject	Calculus I (Single Variable Calculus)			Recitation	3	Hrs./Week
Code	ECE 101	Credits	8	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This calculus module covers differentiation and integration of functions of one variable, and concludes with a brief discussion of infinite series. Calculus is fundamental to many scientific disciplines including physics, engineering, and economics.</p>						

Stage	First			Theory	4	Hrs./Week
Subject	Academic English			Recitation	0	Hrs./Week
Code	U 101	Credits	4	Laboratory	0	Hrs./Week

Module Description:

This purpose of this course is to develop your writing skills so that you can feel confident writing the essays, term papers, reports, and exams. We will read and analyze samples of expository writing, do some work on vocabulary development, and concentrate on developing your ability to write clear, accurate, sophisticated prose. We will also deal with the grammar and mechanical problems you may have trouble with.

Stage	First			Theory	2	Hrs./Week
Subject	Hands-On Introduction to Electrical Engineering Lab Skills			Recitation	0	Hrs./Week
Code	ECE 103	Credits	4	Laboratory	2	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This course introduces students to both passive and active electronic components (op-amps, 555 timers, TTL digital circuits). Basic analog and digital circuits and theory of operation are covered. The labs allow the students to master the use of electronic instruments and construct and/or solder several circuits. The labs also reinforce the concepts discussed in class with a hands-on approach and allow the students to gain significant experience with electrical instruments such as function generators, digital multimeters, oscilloscopes, logic analyzers and power supplies. In the last lab, the students build an electronic circuit that they can keep. The course is geared to freshmen and others who want an introduction to electronics circuits.</p>						

Stage	First			Theory	4	Hrs./Week
Subject	Circuits and Electronics			Recitation	3	Hrs./Week
Code	ECE 105	Credits	6	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module introduces the fundamentals of the lumped circuit abstraction. Topics covered include: resistive elements and networks; independent and dependent sources; switches and MOS transistors; digital abstraction; amplifiers; energy storage elements; dynamics of first- and second-order networks; design in the time and frequency domains; and analog and digital circuits and applications.</p>						

small programs that allow them to accomplish useful goals. The class will use the Python programming language.

Stage	Second			Theory	6	Hrs./Week
Subject	Calculus II (Multivariable Calculus)			Recitation	3	Hrs./Week
Code	ECE 201	Credits	8	Laboratory	0	Hrs./Week

Module Description:

This module covers vector and multi-variable calculus. Topics include vectors and matrices, parametric curves, partial derivatives, double and triple integrals, and vector calculus in 2- and 3-
 As its name suggests, multivariable calculus is the extension of calculus to more than one .space
 variable. That is, in single variable calculus you study functions of a single independent variable

Stage	Second			Theory	4	Hrs./Week
Subject	Calculus III (Linear Algebra)			Recitation	2	Hrs./Week
Code	ECE 202	Credits	5	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module covers the basics of subjects on matrix theory and linear algebra. Emphasis is given to topics that will be useful in engineering and other disciplines, including systems of equations, vector spaces, determinants, eigenvalues, similarity, and positive definite matrices.</p>						

Stage	Second			Theory	4	Hrs./Week
Subject	Practical Programming in C			Recitation	0	Hrs./Week
Code	ECE 203	Credits	5	Laboratory	2	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>The module provides thorough introduction to the C programming language, the workhorse of the UNIX operating system and lingua franca of embedded processors and micro-controllers. The first two weeks will cover basic syntax and grammar, and expose students to practical programming techniques. The remaining lectures will focus on more advanced concepts, such as dynamic memory allocation, concurrency and synchronization, UNIX signals and process control, library development and usage. Daily programming assignments and weekly laboratory exercises are required. Knowledge of C is highly marketable for summer internships, UROPs, and full-time positions in software and embedded systems development.</p>						

Stage	Second			Theory	4	Hrs./Week
Subject	Microelectronic Devices and Circuits			Recitation	3	Hrs./Week
Code	ECE 204	Credits	6	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>The topics covered in this module include: modeling of microelectronic devices, basic microelectronic circuit analysis and design, physical electronics of semiconductor junction and metal-on-silicon (MOS) devices, relation of electrical behavior to internal physical processes, development of circuit models, and understanding the uses and limitations of various models. The course uses incremental and large-signal techniques to analyze and design bipolar and field effect transistor circuits, with examples chosen from digital circuits, single-ended and differential linear amplifiers, and other integrated circuits.</p>						

Stage	Second			Theory	1	Hrs./Week
Subject	The Scientific Method - Critical and Creative Thinking			Recitation	1	Hrs./Week
Code	GS 201	Credits	1	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module will provide students with an understanding of the scientific method sufficient to detect pseudoscience in its many guises: paranormal phenomena, free- energy devices, alternative medicine, intelligent design creationism/creation science, denial of human-induced climate change, propaganda, denial of science-based- medicine, misuse of data and statistics, and many others. Students will learn to think critically and creatively and to question outlandish claims, hype, propaganda, outright nonsense.</p>						

Stage	Third			Theory	4	Hrs./Week
Subject	Probabilistic Systems Analysis and Applied Probability			Recitation	3	Hrs./Week
Code	ECE 301	Credits	6	Laboratory	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module is an introduction to probabilistic modeling, including random processes and the basic elements of statistical inference. The ability to think probabilistically is a fundamental component of scientific literacy. You will learn the relevant models, skills, and tools that are the keys to analyzing data and making scientifically sound predictions under uncertainty. We emphasize the basic concepts and methodologies, and include dozens of examples and applications.</p>						

Stage	Third			Theory	4	Hrs./Week
Subject	Electromagnetics and Applications			Recitation	3	Hrs./Week
Code	ECE 302	Credits	6	Tutorial	1	Hrs./Week

Module Description:

This course explores electromagnetic phenomena in modern applications, including wireless and optical communications, circuits, computer interconnects and peripherals, microwave communications and radar, antennas, sensors, micro-electromechanical systems, and power generation and transmission. Fundamentals include quasistatic and dynamic solutions to Maxwell's equations; waves, radiation, and diffraction; coupling to media and structures; guided waves; resonance; acoustic analogs; and forces, power, and energy.

Stage	Third			Theory	4	Hrs./Week
Subject	Receivers, Antennas, and Signals			Recitation	2	Hrs./Week
Code	ECE 303	Credits	5	Laboratory	0	Hrs./Week

Module Description:

This module explores the detection and measurement of radio and optical signals encountered in communications, astronomy, remote sensing, instrumentation, and radar. Topics covered include: statistical analysis of signal processing systems, including radiometers, spectrometers, interferometers, and digital correlation systems; matched filters and ambiguity functions; communications channel performance; measurement of random electromagnetic fields, angular

filtering properties of antennas, interferometers, and aperture synthesis systems; and radiative transfer and parameter estimation.

Stage	Third			<i>Theory</i>	4	Hrs./Week
Subject	Digital Communication Systems			<i>Recitation</i>	3	Hrs./Week
Code	ECE 305	Credits	6	<i>Laboratory</i>	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module covers several fundamental ideas in electrical engineering and computer science, using digital communication systems as the vehicle. The three parts of the course—bits, signals, and packets—cover three corresponding layers of abstraction that form the basis of .communication systems like the Internet</p> <p>The module teaches ideas that are useful in other parts of ECE: abstraction, probabilistic analysis, superposition, time and frequency-domain representations, system design principles and trade-offs, and centralized and distributed algorithms. The course emphasizes connections between theoretical concepts and practice using programming tasks and some experiments with real-world communication channels.</p>						

Stage	Third			<i>Theory</i>	4	Hrs./Week
Subject	Computer System Architecture			<i>Recitation</i>	3	Hrs./Week
Code	ECE 306	Credits	6	<i>Laboratory</i>	0	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module is a study of the evolution of computer architecture and the factors influencing the design of hardware and software elements of computer systems. Topics may include: instruction set design; processor micro-architecture and pipelining; cache and virtual memory organizations; protection and sharing; I/O and interrupts; in-order and out-of-order superscalar architectures; VLIW machines; vector supercomputers; multithreaded architectures; symmetric multiprocessors; and parallel computers.</p>						

Stage	Third			<i>Theory</i>	4	Hrs./Week
Subject	Introductory Digital Systems Laboratory			<i>Recitation</i>	2	Hrs./Week
Code	ECE 307	Credits	7	<i>Laboratory</i>	4	Hrs./Week
<p style="text-align: right;">Module Description:</p> <p>This module covers digital design topics such as digital logic, sequential building blocks, finite-state machines, FPGAs, timing and synchronization. The semester begins with lectures and problem sets, to introduce fundamental topics before students embark on lab assignments and ultimately, a digital design project. The students design and implement a final digital project of their choice, in areas such as games, music, digital filters, wireless communications, video, and graphics. The course relies on extensive use of Verilog® for describing and implementing digital logic designs on state-of-the-art FPGA.</p>						

Stage	Third			<i>Theory</i>	4	Hrs./Week
-------	--------------	--	--	---------------	---	-----------

Course Specifications

ECE 101

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Calculus I (Single Variable Calculus)
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الأول \ السنة الاولى
6. عدد الساعات الدراسية (الكلي)	135
7. تاريخ إعداد هذا الوصف	2021\06\6
8. أهداف المقرر	
<p>After completing this module, students should have developed a clear understanding of the fundamental concepts of single variable calculus and a range of skills allowing them to work effectively with the concepts. The basic concepts are:</p> <ol style="list-style-type: none">1. Derivatives as rates of change, computed as a limit of ratios2. Integrals as a "sum," computed as a limit of Riemann sums	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
<p>أ- الأهداف المعرفية</p> <p>After completing this module, students should demonstrate competency in the following skills:</p> <ul style="list-style-type: none">•Use both the limit definition and rules of differentiation to differentiate functions.•Apply differentiation to solve applied max/min problems.•Apply differentiation to solve related rates problems.•Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.

<ul style="list-style-type: none"> •Apply integration to compute arc lengths, volumes of revolution and surface areas of revolution. •Evaluate integrals using advanced techniques of integration, such as inverse substitution, partial fractions and integration by parts. •Use L'Hospital's rule to evaluate certain indefinite forms. •Determine convergence/divergence of improper integrals and evaluate convergent improper integrals. • Determine the convergence/divergence of an infinite series and find the Taylor series expansion of a function near a point.
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>Sketch the graph of a function using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity.</p>
طرائق التعليم والتعلم
<p>This module will be taught through classroom lectures. The lecture material will be reinforced and expanded on through recitation sessions and homeworks.</p>
طرائق التقييم
<p>Quizzes (2) and Home-works (1 per month) = 10%</p> <p>Mid Exams (2 per semester) = 30%</p> <p>Programming assignment (1 per semester) = 10%</p> <p>Final Exam (Theory)= 50%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <ul style="list-style-type: none"> - To pay attention to the theory of calculus as applied to engineering problems. - To share their experience of programming a calculus problem - To discuss the importance of mathematics in their study.
طرائق التعليم والتعلم
<p>Lecture method, group discussion</p> <p>Exams, portfolio of HomeWorks and projects</p>

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

- Abstract thinking
- Understand quantities in real world

11. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	9	<ul style="list-style-type: none"> Use both the limit definition and rules of differentiation to differentiate functions. 	Graphing, derivatives, slope, velocity, rate of change, limits, continuity, trigonometric limits	Lecture	Quiz/ Exam
2	9	<ul style="list-style-type: none"> Sketch the graph of a function using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity. 	derivatives of products, quotients, sine, cosine chain rule, higher derivatives	Lecture	/Quiz Exam
3	9	<ul style="list-style-type: none"> Sketch the graph of a function using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity. 	Implicit differentiation, inverses, Exponential and log, logarithmic differentiation, hyperbolic functions	Lecture	/Quiz Exam
4	9	<ul style="list-style-type: none"> Sketch the graph of a function using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity. 	<i>Linear and quadratic approximations.</i> <i>curve sketching</i>	Lecture	Quiz/
5	9	<ul style="list-style-type: none"> Apply differentiation to solve applied max/min problems Apply differentiation to solve related rates problems. 	<i>Min-max problems.</i> <i>Related rates.</i> <i>Newton's method and other applications.</i> <i>Mean value theorem, inequalities</i>	Lecture	/Quiz Exam
6	9	<ul style="list-style-type: none"> Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus. 	Differentials, antiderivatives, Differential equations, separation of variables, Definite integrals	Lecture	/Quiz Exam

/ Quiz Exam	Lecture	First fundamental .theorem of calculus Second fundamental ,theorem of calculus	Evaluate • integrals both by using Riemann sums and by using the Fundamental .Theorem of Calculus	9	7
/ Quiz Exam	Lecture	Applications to logarithms and .geometry Volumes by disks, .shells	Apply • integration to compute arc lengths, volumes of revolution and surface areas of .revolution	9	8
/ Quiz Exam	Lecture	Work, average value, .probability .Numerical integration	Apply • integration to compute arc lengths, volumes of revolution and surface areas of .revolution	9	9
/ Quiz Exam	Lecture	Trigonometric integrals and .substitutions Integration by inverse substitution, completing the square	Evaluate • integrals using advanced techniques of integration, such as inverse substitution, partial fractions and .integration by parts	9	10
/ Quiz Exam	Lecture	<i>Partial fractions</i> <i>Integration by parts,</i> <i>reduction formulas</i>	Evaluate • integrals using advanced techniques of integration, such as inverse substitution, partial fractions and .integration by parts	9	11
/ Quiz Exam	Lecture	Parametric equations, arclength, surface .area Polar coordinates, area in polar coordinates	Evaluate • integrals using advanced techniques of integration, such as inverse substitution, partial fractions and .integration by parts	9	12
/ Quiz Exam	Lecture	Indeterminate forms - .L'Hôpital's rule Improper integrals	Use • L'Hospital's rule to evaluate certain .indefinite forms	9	13
/ Quiz Exam	Lecture	Infinite series and convergence tests	Determine • convergence/diverge	9	14

			nce of improper integrals and evaluate convergent improper .integrals		
/ Quiz Exam	Lecture	Taylor's series	Determine • the convergence/diverge nce of an infinite series and find the Taylor series expansion of a .function near a point	9	15

10. البنية التحتية	
1- الكتب المقررة المطلوبة	Thomas , G. B. Jr. Maurice D., Joel R. Hass, & Frank R. Giordano. Thomas' Calculus, Single Variable, 12th edition, Pearson, 2009
2- المراجع الرئيسية (المصادر)	Jerison, David. 18.01SC Single Variable Calculus, -1 Fall 2010. (MIT OpenCourseWare: Massachusetts Institute of Technology), http://ocw.mit.edu/courses/mathematics/18-01sc-single-variable-calculus-fall-2010 (Accessed 21 Feb, 2014). License: Creative Commons BY-NC-SA Speck, Jared. 18.01 Calculus, Fall 2013 -2
ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)	http://math.mit.edu/~jspeck/18.01_Fall%202014/1.801_CourseWebsite.html (Accessed 21 Feb, 2014)
ب - المراجع الالكترونية, مواقع الانترنت	Openstax's calculus

Course Specifications

U 103

1. المؤسسة التعليمية	كلية الهندسة - جامعة الكوفة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	حقوق الإنسان/ U 103
4. أشكال الحضور المتاحة	بكالوريوس هندسة الكترونية واتصالات
5. الفصل / السنة	الثاني 2020 - 2021
6. عدد الساعات الدراسية (الكلي)	2

7. تاريخ إعداد هذا الوصف	2021/6/6
8. أهداف المقرر	
أ- توعية الطالب بأهمية القانون في المجتمع .	
ب- تمكين الطالب من معرفة حقوقه وواجباته في الدولة القانونية.	
ج- تمكين الطالب من المهارات العملية للمطالبة العلنية بحقوقه .	
د- مساهمة الطالب في بناء دولة القانون .	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
<p>أ- الأهداف المعرفية</p> <p>أ1- التعرف على مفهوم حقوق الإنسان وأهميتها.</p> <p>أ2- التعرف على أنواع حقوق الإنسان.</p> <p>أ3- التعرف على الحريات العامة في الدستور العراقي.</p> <p>أ4- دراسة الواقع العملي المحيط بالطالب في الجامعة والمجتمع ، من الناحية القانونية.</p> <p>أ5-</p> <p>أ6-</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>ب1 -تعليم الطالب مهارات الإختلاف بالرأي وقبول الرأي الآخر .</p> <p>ب2 - كيفية تنظيم طلب قانوني للمطالبة بالحقوق والحريات .</p> <p>ب3 -</p> <p>ب4-</p>
طرائق التعليم والتعلم
<p>1- المحاضرات النظرية .</p> <p>2- المشاريع .</p> <p>3- المقالات .</p>
طرائق التقييم
<p>1- الإمتحانات اليومية .</p> <p>2- الامتحانات الفصلية.</p> <p>3- اعداد اوراق العمل .</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1-ترسيخ مفهوم المواطنة الايجابية لدى الطالب .</p> <p>ج2- تعزيز الشعور بالانتماء الى الوطن .</p>

طرائق التعليم والتعلم
1- محاضرات نظرية . 2- اعداد اوراق العمل .
طرائق التقييم
1- الإمتحانات النظرية . 2- إنجاز اوراق العمل .
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). د1-مهارات الإتصال . د2-مهارات العمل الجماعي . د3-التعلم الذاتي . د4-

Course Specifications

ECE 107

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Engineering Design and Manufacturing ECE-107
4. أشكال الحضور المتاحة	Theoretical lectures and Laboratory work
5. الفصل / السنة	First year – second semester
6. عدد الساعات الدراسية (الكلي)	60
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
<p>This course is a first subject in engineering design. This course is a great learning experience exposing students to interesting material, challenging students to think deeply, and providing skills useful in professional practice.</p> <p>In engineering design, it is helpful to give careful considerations to objectives and to the form in which they are expressed. To the extent possible, the learning objectives of this subject were developed as the following guidelines:</p>	
1. Knowledge (List, recite, ...etc.),	
10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	

أ- الأهداف المعرفية

- Generate, analyze, and refine the design of electro-mechanical devices making use of physics and mathematics
- For common machine elements including fasteners, joints, springs, bearings, gearing, clutches, couplings, belts, chains, and shafts
 - Describe the function of the element
 - List common uses in mechanical systems and give examples
 - Analyze its performance and failure modes
 - Describe how they are manufactured and the implications of the alternatives
 - Select an element for a specific use based on information such as that typically available in a manufacturer's catalog

ب - الأهداف المهاراتية الخاصة بالمقرر.

- Apply experimentation and data analytic principles relevant to mechanical design
 - Consider the effects of geometric variation on a design
 - Analyze data from performance evaluations of a mechanical system
 - Present data in appropriate graphical formats
 - Plan an experimental investigation to refine a system

طرائق التعليم والتعلم

This module consists of 2 hours/week lecture sessions, 1 hours/week recitation and 3 hours/week lab sessions comprising mixes of drawing, designing, fabrication, electronics, programming, experimentation, peer group meetings, and oral reports. These "lab" sessions vary to some degree from section-to section, but mostly follow a pattern described in a set of documents describing the deliverables and expectations for each week. Students are expected to spend an average of an additional 2 hours per week in self-study.

طرائق التقييم

1. Laboratory work and Homework:

- There will be a minimum of ten sets of lab-work during the academic course.
- Please note that homework should be submitted at the beginning of the class before the start of the lecture.
- The lab-work and homework will count 10% of the total course grade.

2. Quizzes:

- There will be four closed books and notes quizzes during the academic year.
- The quizzes will count 10% of the total course grade.

3. Exams:

- There will be four closed books and notes exams during the academic year,
- The four exams will count 20% of the total course grade.

4. Project:

- The final year project submission and discussion.
- The project will count 10% of the total course grade.

5. Final Exam:

- The final exam will be comprehensive, closed books and notes.
- The final exam will count 50% of the total course grade.

ج- الأهداف الوجدانية والقيمية

- Communicate a design and its analysis (written, oral, and graphical forms)
 - Read and interpret mechanical drawings of systems with moderate complexity
 - Create correct mechanical drawings of simple elements and systems
 - Create useful parametric solid models of simple elements and systems

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

- Make effective presentations in a design review format
- Respond effectively in real time to technical questioning by experts

2. Comprehension (Explain, paraphrase, ...etc.),

3. Application (Calculate, solve, ...etc.),

4. Analysis (Predict, model, derive, ...etc.),

5. Synthesis (Design, invent, propose, ...etc.),

6. Evaluation (Judge, critique, justify, ...etc.).

11.بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	3	Understanding engineering drawing	The Graphic Language.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
1	3	Understanding engineering drawing	Technical Sketching and Shape Description.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
2	6	Understanding CAD tools	CAD Software and its Use.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
3	6	Understanding Geometrical theory	Geometrical Constructions.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
4	6	Dimensioning objects	Lettering and Dimensioning.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
5	3	Orthographic Projections.	Theory of Projection.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
5	3	Understanding sections	Sections.	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
6	6	Projection/View/Drawing	Isometric	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
7	6	Exploded Assembly, & Enhancing Drawing	Assembly	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
8	6	Design engineering parts	Engineering Design	lectures followed by hands-on/CAD exercises	lab-work Quiz Exam
9	6	Using 3D printer for manufacturing prototype	Manufacturing	lectures followed by hands-	lab-work Quiz Exam

	on/CAD exercises				
lab-work Quiz Exam	lectures followed by hands-on/CAD exercises	Professional Ethics	Understanding Ethics	3	10
lab-work Quiz Exam	lectures followed by hands-on/CAD exercises	Project Submission and Discussion.	Understanding full design	3	10

12. البنية التحتية

Textbook by Maher A.R. Sadiq Al-Baghdadi and Ammar AbdulNabi, Engineering Drawing by using Computer Aided Design (CAD), DARF Pub. 2005	1- الكتب المقررة المطلوبة
Textbook by David P. Madsen and David A. Madsen, Engineering Drawing and Design, Delmar Publishers Inc. 2011.	2- المراجع الرئيسية (المصادر)
<ol style="list-style-type: none"> 1. Basant Agrawal and C.M. Agrawal, Engineering Drawing, McGraw-Hill, 2008. 2. R. K. Dhawan, A Textbook of Engineering Drawing. S.Chand & Company Ltd., 2008. 	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
Autodesk, 3D Design, Engineering & Construction Software. http://www.autodesk.com/	ب - المراجع الالكترونية, مواقع الانترنت

13. خطة تطوير المقرر الدراسي

Using technology (plotter, printer, 3D printer, 3D scanner, Virtual technology) to help in explaining ideas to the students, efficiently. It, also, helped in minimizing time required to explain each topic.

Course Specifications

ECE 106

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Electricity & Magnetism
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الثاني \ السنة الاولى
6. عدد الساعات الدراسية (الكلي)	75
7. تاريخ إعداد هذا الوصف	2021\6\12
8. أهداف المقرر	يهدف موضوع الكهربية والمغناطيسية الى ان يتعلم الطالب خلال السنة الدراسية معلومات عن المجال الكهربائي والمغناطيسي والقوة والشغل و قياس قوي التجاذب والتنافر بين الشحنات بالإضافة الى دراسة الحث الكهربائي والمغناطيسي والعوازل والمتسعات بانواعها وتطبيقاتها في مجال علم والى تنمية عقل الطالب ويمكنه من التصور العملي في انتقال المعلومات واسس انشاء الدوائر الكهربائية المختلفة وعليه فان الغاية التي نتوخاها من تدريس هذه المادة هي ترسيخ المبادئ والاسس النظرية التي تعتمد في انشاء دوائر انتقال الموجات الكهرو مغناطيسية في أنظمة الاتصالات و فهمها بشكل مطلق

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
أ- الأهداف المعرفية أ1- يتعلم الطالب خلال السنة الدراسية الموجات الكهرومغناطيسية أ2- تعلم الطالب القوانين التي تتحكم بالمجالات مثل كاوس وامبير وماكسويل وفاراداي أ3- تعلم وفهم انواع المواد الوصلة والعازلة
ب - الأهداف المهاراتية الخاصة بالمقرر. ب1 -الالمام بالعلاقات الرياضية الخاصة ب2-الالمام بقوانين الحث المغناطيسي ب3-الالمام بالقوانين الرياضية وخاصة ماكسويل

طرائق التعليم والتعلم
يقوم التدريسي بالقاء محاضرات تفصيلية نظرية . يقوم التدريسي بطلب تقارير دورية للمواضيع الاساسية للمادة
طرائق التقييم
. امتحانات يومية باسئلة عملية وعلمية . درجات مشاركة لاسئلة المنافسة الصعبة بين الطلاب . وضع درجات للواجبات البيتية والتقارير المكلفة بهم امتحانات فصلية للمنهج الدراسي اضافة الى امتحان نصف السنة والامتحان النهائي
ج- الأهداف الوجدانية والقيمية ج1- حث الطالب على التفكير بطرق انتشار الموجات الكهرومغناطيسية - . ج2- حث الطالب على التفكير باهمية توليد الاشارات وطرق نقلها - ج2- حث الطالب على التفكير بالعوامل المؤثرة - -
طرائق التعليم والتعلم
يقوم التدريسي بالقاء محاضرات تفصيلية نظرية
طرائق التقييم
. امتحانات يومية باسئلة عملية وعلمية . درجات مشاركة لاسئلة المنافسة الصعبة بين الطلاب . وضع درجات للواجبات البيتية والتقارير المكلفة بهم امتحانات فصلية للمنهج الدراسي اضافة الى امتحان نصف السنة والامتحان النهائي
المهارات العامة و التأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي)
. -تمكين الطلبة من ربط النظريات بالواقع العملي للدوائر الكهربائية1د د2-تمكين الطلبة من اجتياز اختبارات مهنية تنظم من قبل جهات محلية او دولية د3-تمكين الطلبة من التطوير الذاتي المستمر لما بعد التخرج د4-أقامة سمينرات خاصة للطلاب لغرض التطوير الذاتي لشخصياتهم

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / المساق أو الموضوع	طريقة التعليم	طريقة التقييم
2-1	3	العمليات الرياضية الخاصة بالماتجاهات كالجمع والضرب والطرح وغيرها	Vector algebra	محاضرات معروضة بشكل power point	امتحانات يومية + تجارب عملية + امتحانات شهري
4-3	3	قوى التجاذب والتنافر والمجالات الكهربائية	Coloumbs law	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
6-5	3	توزيع شدة المجال الكهربائي	Electric flux intensity	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
8-7	3	كثافة المجال الكهربائي	Flux density	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
9	3	توزيع كولوم للشحنة النقطية	Columb distribution, point charge	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
10	3	المجال الكهربائي للشحنة الخطية	field of line charge	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
11	3	الشحنة الحجمية	Volume charge	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
12	3	مجالات للشحنة السطحية	field of sheet of charge	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
13	3	قانون كاوس	Gauss law	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
14	3	كثافة المجالات الكهربائية وثانون ماكسويل الاول	Electric flux density , Maxwell 's first equation	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري
15	3	تطبيقات قانون كاوس	Gauss 's law – application of Gauss's law	محاضرات معروضة بشكل PowerPoint	امتحانات يومية + تجارب عملية + امتحانات شهري

<p>– MATTEW N. O. SADIKU ,ELEMENTS OF ELECTROMAGNETICS ,OXFORD UNIVERSITY PRESS,2018</p>	<p>1-الكتب المقررة المطلوبة :</p>
<p>مكتبة الكلية للحصول على المصادر الاضافية للمناهج الدراسية. الاطلاع على المواقع الالكترونية العلمية للاطلاع على المستجدات الحديثة في المادة .</p>	<p>2- المراجع الرئيسية (المصادر)</p>
<p>جميع المجالات العلمية الرصينة التي لها علاقة بالمفهوم الواسع للمجالات الكهرومغناطيسية .</p>	<p>ا- الكتب والمراجع التي يوصى بها (المجلات العلمية ,التقارير,.....)</p>
<p>– FAWWAZ T. ULABY ,FUNDAMENTALS OF APPLIED ELECTROMAGNETICS ,2015</p>	<p>ب- المراجع الالكترونية , مواقع الانترنت</p>

Course Specifications

ECE 108

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Hands-On Introduction to EE Lab Skills(ECE 108)
4. أشكال الحضور المتاحة	محاضرات (نظرية وعملية)
5. الفصل / السنة	الفصل الأول \ 2020-2021
6. عدد الساعات الدراسية (الكلي)	60
7. تاريخ إعداد هذا الوصف	2021\06\6
8. أهداف المقرر	<p>This course introduces students to both passive and active electronic components (RLC circuits, Transistors, op-amps,..etc). Basic analog and digital circuits and theory of operation are covered. The labs allow the students to master the use of electronic instruments. The labs also reinforce the concepts discussed in class with a hands-on approach and allow the students to gain significant experience with electrical instruments such as function generators, digital multimeters, oscilloscopes, logic analyzers and power supplies. In the last lab, the students build an electronic circuit that they can keep. The course is geared to freshmen and others who want an introduction to electronics circuits.</p>

8. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
<p>أ- الأهداف المعرفية و المهاراتية الخاصة بالمقرر</p> <p>1-Ability to become familiar with using all the lab instruments like a function generator, a digital multimeter, Breadboard and an oscilloscope</p> <p>2- Ability to construct different electronic circuits and develop a quantitative understanding of the behavior of these circuits.</p> <p>3- The acquired ability to correlate the theoretical lecture part with the practical effect in the lab.</p>

4- The independent ability to identify the electronic components like					
9. بنية المقرر للفصل الاول					
طريقة التقييم	طريقة التعليم	اسم الوحدة / أو الموضوع	مخرجات التعلم المطلوبة	الساعات	اسبوع
Quiz/ Exam	Lecture Lab	Lab Instruments	Understanding and becoming familiar with Function generator, digital multimeter, Dc power supply , oscilloscope and (other components)	4 +4Lab	
/Quiz Exam	Lecture Lab	Parallel and series networks of Resistors and RLC networks, Ohms law besides measuring voltages and currents and Resistor colour codes	Under tanding how to solve problems theoretically and find the results practically and how to determine the parallel out series circuits by Practicing physically on breadboard.	4 +4Lab	
/Quiz Exam	Lecture Lab	Introduction to Diode, Biasing and teaching different applications	Understanding the Diode, forward and reverse Biasing and its construction application as a clipper or a Halfwave rectifier cct and Practicing physically on breadboard &a	8 +8Lab	
Quiz/	Lecture Lab	Full wave Rectifier circuits and Zener Diode, Led Diode , Photodiode Charging and discharging Capacitors and inductors Introduction to BJT Transistor	Practicing physically on breadboard and Understanding all the relevant circuits and get to know the differences between different types of diodes theoretically and practically in the Lab and how we could benefit from each type. example, Voltage Regulator circuit	4 +8Lab	8,9,11
/Quiz Exam	Lecture Lab	Introduction to BJT, - Biasing & Amplification	Understanding Biasing , working Regions , three types Configuration as well as the equivalent circuit to each region of transistor	6 +6Lab	12,1
/ Quiz Exam	Lecture Lab	A quick Review	Reviewing all the previous subject briefly	2 +4Lab	
diodes , transistors,..., Op-Amps and to show its specification, how it's					

work and how we can benefit from them in useful and various practical projects.

5- Ability to differentiate between slow and fast Responses of the circuits in terms of which components are used and the way of their constructing.

6- Ability to use the Algorithms or theorems to analyze different network problems and design them accordingly by the lab tools .

7- The ability of simulation by Multisim program as a major tools for lab analysis

طرائق التعليم والتعلم

Lectures include Tutorials (via examples and solved problems, 1 per lecture) (2hrs/week)
Lab (4hrs/week)

طرائق التقييم

Theory Exams - Quizzes (2) and Home-works - (2 per semester) = 30%
Lab Exams (2 per semester) = 20%
Final Exam (Theory)= 30%
Final Exam (Lab) = 20%
Total = 100%

ج- الأهداف الوجدانية والقيمية

To value thinking along with hard-work to reach excellence and serve people using lab instruments alongside with the modern computing program (Multisim).

طرائق التعليم والتعلم

Face-to-face online lectures for basic knowledge and covering the theoretical part lecture.

Using and Knowing that Multisim is a fundamental tool for simulation and virtual lab methods.

Using many Questions and Tutorials for brain-storming

Physical attendances in the lab for practicing what have been taught practically.

10. البنية التحتية	
Electronic Devices (conventional current version) , Thomas .L Floyd 2008	1- الكتب المقررة المطلوبة
BASIC ELECTRONICS ,Debashis De With contributions from Kamakhya Prasad Ghatak Delhi • Chennai • Chandigag.	2- المراجع الرئيسية (المصادر)
SCHAUM'S OUTLINE OF THEORY AND PROBLEMS of BASIC CIRCUIT ANALYSIS Second Edition	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
Use google search for websites of relevance on international universities especially : Labs Hands-On Introduction to Electrical Engineering Lab Skills Electrical Engineering and Computer Science MIT OpenCourseWare	ب - المراجع الالكترونية, مواقع الانترنت

11 خطة تطوير المقرر الدراسي
We can improve this subject by extending the hours of the practical perspective to get involved more practical actual circuits by which the students will have a complete picture and a sufficient chance to master it as well as increasing the capacity of the lab by purchasing more lab benches.

Course Specifications

U 101

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	اللغة الانكليزية
4. أشكال الحضور المتاحة	محاضرات
5. الفصل / السنة	الفصل الاول \ السنة الاولى
6. عدد الساعات الدراسية (الكلي)	30
7. تاريخ إعداد هذا الوصف	13/6/2021
8. أهداف المقرر	
Improve student's ability to speak confidently	
Improving student's skills in writing academic English essays	
Developing student's ability to read academic texts	
Developing student's ability to listen to different English conversations	
Increase student's knowledge in term of academic English vocabulary	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
<p>أ- الأهداف المعرفية</p> <p>1- Ability to use correct tense in sentences-1أ</p> <p>2- Ability to write different formats of sentences-2أ</p> <p>3- Ability to use academic vocabulary -3أ</p> <p>4- Ability to listen to and understand a conversation-4أ</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>1ب - Gain skills to write a report or a research</p> <p>2ب - Gain reading skills such as skimming and scanning a text</p> <p>3ب - Ability to handle a conversation in English</p> <p>4ب -</p>

طرائق التعليم والتعلم

Lectures (2hrs/week)
Lab (hrs/week)
Assignments (1 per semester)
Tutorials (explaining the subject, solve exercises , 1 per lecture)

طرائق التقييم

Quizzes (4) and Home-works (2 per month) = 15%
Theory Exams (2 per semester) = 25%

10بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
2&1	+2	Verb to be/ articles Demonstrative adjectives Plurals How, what and where questions learn vocabularies (countries, nationalities and languages)	Unit 1&2	Lecture Tutorial	Quiz exam
2&3	2+2	Adjectives Negatives and questions Personal information Social expression learn vocabularies (jobs)	Unit 3	Lecture Tutorial	Quiz exam
4&5	2+2	adverbs Possessive adjectives Have/has learn vocabularies (family and relatives)	Unit 4	Lecture Tutorial	Quiz exam
6&7	2+2	present simple tense learn vocabularies (sport/food/drink)	Unit 5	Lecture Tutorial	Quiz exam
8&9	2+2	The time Adverbs of frequency Use how often / routines Words that go together	Unit 6	Lecture Tutorial	Quiz exam

Quiz exam	Lecture Tutorial	Unit 7	Present continuous tense Prepositions Object pronouns Use can to express ability	2+2	10&11
Quiz exam	Lecture Tutorial	Unit 8	Past simple tense There is /are There was/were learn vocabularies (room and furniture)	2+2	12&13
Oral Exams (1 per semester) = 10% Final Exam (Theory)= 50% Final Exam (Oral) = 0% Total = 100%					
ج- الأهداف الوجدانية والقيمية ج1- learn a new language that is used by a large number of people in the world ج2- knowing about other's culture and respect their traditions when you learn their language ج3- ج4-					
طرائق التعليم والتعلم					
Face-to-face lectures for basic knowledge, and give different examples					
طرائق التقييم					
Answer direct questions during lectures					
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). د1- د2- د3- د4-					

11. البنية التحتية	
Beginner student's book new head-way By John and Liz Loasr	1- الكتب المقررة المطلوبة
Beginner Work book with key new head-way by John and Liz Loasr	2- المراجع الرئيسية (المصادر)
خطة تطوير المقرر الدراسي	14. أ (المجلات العلمية - التقارير - ...)
	ب - المراجع الالكترونية, مواقع الانترنت

Course Specifications

U 103

كلية الهندسة	1. المؤسسة التعليمية
قسم الهندسة الالكترونية والاتصالات	2. القسم العلمي / المركز
English Academic skill-2	3. اسم / رمز المقرر
محاضرات (نظرية)	4. أشكال الحضور المتاحة
الفصل الثاني \ السنة الاولى	5. الفصل / السنة
20	6. عدد الساعات الدراسية (الكلي)
2021\06\12	7. تاريخ إعداد هذا الوصف
8. أهداف المقرر	

Understanding simple present, simple past, and progressive tenses.
Understanding perfect present, perfect past, and perfect progressive tenses.
Understanding the general framework of academic essay.
Understanding thesis statement, and topic sentences of an essay.
Understand academic essay development.
Using the general framework of academic essay to write articles.
Understanding cause and effect structures in writing academic essay.
Understanding differences and similarities structures in writing academic essay.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
<p>أ- الأهداف المعرفية</p> <ol style="list-style-type: none"> 1- Ability to understand when to use simple verb tenses. 2- Ability to understand when to use perfect verb tenses. 3- Ability to analyze MAP points of an essay. 4- Ability to write an academic essay based on the general framework.
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <ol style="list-style-type: none"> 1- Ability to analyze ideas before writing an essay. 2- Ability to analyze cause and effect in academic essay. 3- Ability to analyze differences and similarities in academic writing. 4- Ability to write effective essay base on academic writing roles.
طرائق التعليم والتعلم
<p>Lectures (2hrs/week) Assignments (1 per lecture) Tutorials (via examples and solved problems, 1 per lecture)</p>
طرائق التقييم
<p>Attendance = 5% Quizzes (2) (1 per month) = 20% Homework = 25% Final Exam = 50% Total = 100%</p>

ج- الأهداف الوجدانية والقيمية

To value academic writing skills including critical thinking, problem analysis, and using standard academic writing rules for writing essays.

To know that academic writing skills are essential for academic carrier and other disciplines.

طرائق التعليم والتعلم

- 1- Online lectures for basic knowledge,
- 2- Using the textbook to find topics, for which student is asked to write an academic essay.
- 3- Using many Questions and Tutorials for brain-storming

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

To learn that critical thinking, topic analysis, and using the general framework are essentials for academic writing.

To know that academic writing is the only way for success in academic carrier.

To know that student need to use academic writing skills to when writing articles for their academic requirement and even for applying for jobs.

To know that academic knowledge need to be written in an organized way, which academic writing skills.

Course Specifications

U 201

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	اللغة الانكليزية
4. أشكال الحضور المتاحة	محاضرات
5. الفصل / السنة	الفصل الاول\السنة الثانية
6. عدد الساعات الدراسية (الكلي)	30
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
	Ability to good reading
	Ability to good writing
	Ability to god speaking
	Improving their skills in English academic

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
أ- الأهداف المعرفية 1- to learn tenses in grammar 2- formatting the sentences with suitable tenses 3- using the suitable vocabulary

<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>ب1 – easy to writing the research or report</p> <p>ب2 – understanding when reading every article</p> <p>ب3 – having a good organization for subjects</p> <p>ب4 -</p>
<p>طرائق التعليم والتعلم</p>
<p>Lectures (2hrs/week)</p> <p>Lab (2hrs/week)</p> <p>Assignments (1 per semester)</p> <p>Tutorials (explaining the subject, solved exercises , 3 per lecture)</p>
<p>طرائق التقييم</p>
<p>Quizzes (2) and Home-works (1 per month) = 10%</p> <p>Theory Exams (2 per semester) = 30%</p> <p>Oral Exams (2 per semester) = 10%</p> <p>Final Exam (Theory)= 40%</p> <p>Final Exam (Oral) = 10%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>To value academic writing skills including critical thinking, problem analysis, and using standard academic writing rules for writing essays.</p> <p>To know that academic writing skills are essential for academic carrier and other disciplines.</p>
<p>طرائق التعليم والتعلم</p>
<p>Face-to-face lectures for basic knowledge,</p> <p>Using many Questions and Tutorials for brain-storming</p>
<p>طرائق التقييم</p>
<p>Attendance = 5%</p> <p>Quizzes (2) (1 per month) = 20%</p> <p>Homework = 25%</p> <p>Final Exam = 50%</p> <p>Total = 100%</p>

<p>د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).</p> <p>To learn that critical thinking, topic analysis, and using the general framework are essentials for academic writing.</p> <p>To know that academic writing is the only way for success in academic carrier.</p> <p>To know that student need to use academic writing skills to when writing articles for their academic requirement and even for applying for jobs.</p> <p>To know that academic knowledge need to be written in an organized way, which academic writing skills.</p>
--

11.بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
2&1	2+2	Getting to know you Solved exercise	Unit 1	Lecture Tutorial	Quiz exam
2&3	2+2	It all went wrong Solved exercise	Unit 2	Lecture Tutorial	Quiz exam
4&5	2+2	The way we live Solved exercise	Unit 3	Lecture Tutorial	Quiz exam
6&7	2+2	It all went wrong Solved exercise	Unit 4	Lecture Tutorial	Quiz exam
8&9	2+2	Let's go shopping! Solved exercise	Unit 5	Lecture Tutorial	Quiz exam
10&11	2+2	Tell me! What's it like? Solved exercise	Unit 6	Lecture Tutorial	Quiz exam
12&13	2+2	Famous couples Solved exercise	Unit 7	Lecture Tutorial	Quiz exam
10.البنية التحتية					

Pre- intermediate student's book new head-way John and Liz Loasr	1- الكتب المقررة المطلوبة
Pre- intermediate Work book with keey new head-way John and Liz Loasr	2- المراجع الرئيسية (المصادر)
	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
	ب - المراجع الالكترونية , مواقع الانترنت

Course Specifications

ECE 204

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Microelectronic Devices and Circuits \ ECE 204
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الاول \ السنة الثانية
6. عدد الساعات الدراسية (الكلي)	90
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
modeling of microelectronic devices, basic microelectronic circuit analysis and design, physical electronics of semiconductor junction and metal-on-silicon (MOS) devices, relation of electrical behavior to internal physical processes, development of circuit models, and understanding the uses and limitations of various models. The course uses incremental and large-signal techniques to analyze and design bipolar and field effect transistor circuits, with examples chosen from digital circuits, single-ended and differential linear amplifiers, and other integrated circuits.	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

أ- الأهداف المعرفية

- Ability to understand kinds of semiconductors -1
- Ability to choose the right material for design semiconductor devices -2
- Ability to understand the current generation in semiconductor -3
- Ability to understand the PN junction and its biasing -4
- Ability to understand the structure of MOS FET and BJT transistors -5
- Ability to have knowledge to design and analyses of transistors -6

ب - الأهداف المهاراتية الخاصة بالمقرر.

- Ability to use semiconductors devices for real-life applications - 1
- Ability to design electronic circuits to facilitate many task in our life – 2
- Ability to analyze and modify electronic circuit according to the – 3 requirements.
- Ability to use electronic circuits (semiconductor) as a logic gate and its digital application -4

طرائق التعليم والتعلم

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1 2	8	Overview of semiconductor applications, silicon integrated circuit technology, Intrinsic semiconductors, electrons and holes, bond model, generation recombination and thermal equilibrium; doping, donors, acceptors, compensation	Semiconductor Materials and Diodes	Lecture	/Quiz Exam
3,4	8	Carrier transport, drift velocity, drift current density, diffusion current density The p-n junction	Semiconductor Materials and Diodes	Lecture	/Quiz Exam
5	4	The p-n junction in thermal equilibrium Introduction to the MOS structure, MOS capacitor in thermal equilibrium	Semiconductor Materials and Diodes	Lecture	/Quiz Exam
6,7	8	MOS capacitor under applied bias; accumulation, depletion, and inversion regions, MOSFET physical structure, circuit symbol and terminal characteristics, MOS transistor characteristics	The Field-Effect Transistor	Lecture	/Quiz Exam
8	4	MOS transistor, backgate effect, MOSFET in saturation	The Field-Effect Transistor	Lecture	/Quiz Exam

/Quiz Exam	Lecture	The Field- Effect Transistor	Digital logic concepts, inverter characteristics, logic levels and noise margins, transient characteristics, inverter circuits, NMOS/resistor loads, NMOS/current source load, CMOS inverter, static analysis	8	9,10
/Quiz Exam	Lecture	The Bipolar Junction Transistor	Introduction of bipolar junction transistor, terminal characteristics, forward active bias, current gain, Reverse active mode and saturation, the Ebers-Moll model	8	11,1 2
/Quiz Exam	Lecture	The Bipolar Junction Transistor	DC analyses of Common base/gate amplifier, common collector/drain	8	13,1 4
/Quiz Exam	Lecture	The Bipolar Junction Transistor	Biasing	4	15

Lectures (4hrs/week)

Assignments (2 for whole course)

Tutorials (via examples and solved problems, 1 per lecture)

طرائق التقييم

Quizzes (2) and Home-works (1) (for each chapter) = 20%

Exams (1) (for each chapter) = 30%

Final Exam = 50%

Total = 100%

ج- الأهداف الوجدانية والقيمية

1-To value hard-work to reach excellence and serve people using modern

science To know that cooperation with other disciplines (e.g., engineering or -2 medicine) is necessary via multi-disciplinary knowledge
طرائق التعليم والتعلم
Face-to-face lectures for basic knowledge, Using the internet for up-to-date electronic devices. Know that Multisim is a fundamental tool for simulation methods. Using many Questions and Tutorials for brain-storming

11. البنية التحتية	
Neamen, Donald. Microelectronic Circuit Analysis and Design. 3rd ed. New York, NY: McGraw-Hill, 2006. ISBN: 9780073285962.	1- الكتب المقررة المطلوبة
1- Howe, Roger, and Charles Sodini. Microelectronics: An Integrated Approach. Upper Saddle River, NJ: Prentice Hall, 1996. ISBN: 9780135885185. 2- Sedra, Adel, and Kenneth Smith. Microelectronic	2- المراجع الرئيسية (المصادر)
1. Follow up the latest developments in scientific research	
2. Updating the course by following the vocabulary of the .curricula	
3. Take into account the needs of the labor market and set .curriculum vocabulary	
Circuits. New York, NY: Oxford University Press, 2007. ISBN: 9780195338836.	
1- Sodini, Charles, Jing Kong, Judy Hoyt, Jesús del Alamo, and Akintunde (Tayo) Akinwande. 6.012 Microelectronic Devices and Circuits, Spring 2009. (MIT OpenCourseWare: Massachusetts Institute of Technology), http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-012-microelectronic-devices-and-circuits-spring-2009 (Accessed 1 Mar, 2014). License: Creative Commons BY-NC-SA	ب - المراجع الالكترونية, مواقع الانترنت

Course Specifications

ECE 207

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Introductory Analog Electronics Laboratory \ ECE 207
4. أشكال الحضور المتاحة	محاضرات (نظرية وعملية)
5. الفصل / السنة	الفصل الثاني \ السنة الثانية
6. عدد الساعات الدراسية (الكلي)	120
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
This module is an introductory experimental laboratory that explores the design, construction, and debugging of analog electronic circuits. This subject covers diodes, transistors, JFETs, op-amps, and basic analog circuit design as applied to audio and radio frequency circuits. Students spend the second term designing their own projects. Projects vary in scope and breadth, depending on students' level of prior background and interest.	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
أ- الأهداف المعرفية -1 Ability to understand kinds of analog circuits -2 Ability to choose the right configuration for design an amplifier -3 Ability to understand the small signal model -4 Ability to understand the Ac equivalent circuit -5 Ability to calculate the current and voltage gain -6 Ability to have knowledge about different configurations of transistors 7- Ability to understand the operational amplifier op-amp and its application

<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>1 - Ability to use transistor as amplifier for real-life applications</p> <p>2 - Ability to design electronic circuits to facilitate many task in our life</p> <p>3 - Ability to analyze and modify electronic circuit according to the requirements.</p> <p>4 - Ability to use electronic circuits (semiconductor) as a logic gate and its digital application</p> <p>5- using operational amplifier op-amp to design a small project in lab</p>
<p>طرائق التعليم والتعلم</p>
<p>Lectures (4hrs/week)</p> <p>Assignments (2 for whole course)</p> <p>Tutorials (via examples and solved problems, 1 per lecture)</p>
<p>طرائق التقييم</p>
<p>Quizzes (2) and Home-works (1) (for each chapter) = 10%</p> <p>Exams (1) (for each chapter) = 30%</p> <p>Lab experiments =10%</p> <p>Final Exam = 40%</p> <p>Lab Exam = 10%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>1-To value hard-work to reach excellence and serve people using modern science</p> <p>2-To know that cooperation with other disciplines (e.g., engineering or medicine) is necessary via multi-disciplinary knowledge</p>
<p>طرائق التعليم والتعلم</p>
<p>Face-to-face lectures for basic knowledge,</p> <p>Using the internet for up-to-date electronic devices.</p> <p>Know that Multisim is a fundamental tool for simulation methods.</p> <p>Using many Questions and Tutorials for brain-storming</p>

11.بنية المقرر					
طريقة التقييم	طريقة التعليم	اسم الوحدة / أو الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
/Quiz Exam	Lecture	MOS FET Amplifier	Construction and Characteristics of MOSFET: Depletion and Enhancement MOSFETs; FET D.C. Biasing; FET Small Signal Analysis and Modeling	8	1,2
/Quiz Exam	Lab	MOS FE transistor	Field Effect Transistor Characteristics	8	
/Quiz Exam	Lecture	MOS FET Amplifier	Common source, common drain and common gate amplifier	8	3,4
/Quiz Exam	Lab	MOS FET transistor	FET Amplifier Design, Feedback Amplifiers	8	
/Quiz Exam	Lecture	BJT transistor amplifier	BJT Small Signal Modeling; The r_e Transistor Model; The Hybrid Equivalent Model; h-Parameters.	8	5,6
/Quiz Exam	Lab	introduction	The Zener Diode, Bipolar Transistor Characteristics	8	
/Quiz Exam	Lecture	BJT transistor amplifier	Transistor Construction and Operation; Common-Base, Common-Emitter, and Common-Collector Configurations; Transistor Amplifier.	8	7,8
/Quiz Exam	Lab	BJT transistor	Transistor as a Switch, Common Emitter Transistor Amplifier Design	8	
/Quiz Exam	Lecture	BJT transistor amplifier	Fixed-Bias Configuration; Emitter-Bias Configuration; Voltage-Divider Bias Configuration; Collector Feedback Bias Configuration; Common-Collector Configuration; Common-Base Biasing; Graphical D.C. Bias Configuration; D.C. Bias Circuit Design; Integrated Circuit Biasing; Bias Stabilization.	8	9,10
/Quiz Exam	Lab	BJT transistor	Common Collector Amplifier Design, Common Base Amplifier	8	
/Quiz Exam	Lecture	Operational Amplifier Applications	Inverting and Non-Inverting Operational Amplifiers; Instrumentation Amplifiers; Summing and Difference Amplifiers; Controlled Sources; Half-Wave and Full Wave Rectifiers; Clipping Circuits; Limiters; Logarithmic and Anti-Log Amplifiers.	8	11,12
/Quiz	lab	Op-Amp	The Operational Amplifier	8	

Exam					
------	--	--	--	--	--

10. البنية التحتية	
Neamen, Donald. Microelectronic Circuit Analysis and Design. 3rd ed. New York, NY: McGraw-Hill, 2006. ISBN: 9780073285962.	1- الكتب المقررة المطلوبة
1- Howe, Roger, and Charles Sodini. Microelectronics: An Integrated Approach. Upper Saddle River, NJ: Prentice Hall, 1996. ISBN: 9780135885185. 2- Sedra, Adel, and Kenneth Smith. Microelectronic Circuits. New York, NY: Oxford University Press, 2007. ISBN: 9780195338836.	2- المراجع الرئيسية (المصادر)
1- Sodini, Charles, Jing Kong, Judy Hoyt, Jesús del Alamo, and Akintunde (Tayo) Akinwande. 6.012 Microelectronic Devices and Circuits, Spring 2009. (MIT OpenCourseWare: Massachusetts Institute of Technology), http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-012-microelectronic-devices-and-circuits-spring-2009 (Accessed 1 Mar, 2014). License: Creative Commons BY-NC-SA	ب - المراجع الالكترونية, مواقع الانترنت

12. خطة تطوير المقرر الدراسي
<p>1. Follow up the latest developments in scientific research related to the course</p> <p>2. Updating the course by following the vocabulary of the specialized international universities .curricula</p> <p>3. Take into account the needs of the labor market and seek to meet them by reviewing the .curriculum vocabulary</p>

Course Specifications

ECE 210

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Calculus II (Multivariable Calculus)/ ECE201
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	Second Stage/First Semester
6. عدد الساعات الدراسية (الكلي)	120
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
By the end of the module you will know how to differentiate and integrate functions of several variables. In single variable calculus the Fundamental Theorem of Calculus relates derivatives to integrals. We will see something similar in multivariable calculus and the capstone to the course will be the three theorems (Green's, Stokes' and Gauss') that do this.	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
أ- الأهداف المعرفية After completing this module, students should have developed a clear understanding of the fundamental concepts of multivariable calculus and a range of skills allowing them to work effectively with the concepts. The basic concepts are:

- Derivatives as rates of change, computed as a limit of ratios
- Integrals as a 'sum,' computed as a limit of Riemann sums

ب - الأهداف المهاراتية الخاصة بالمقرر.

1. Fluency with vector operations, including vector proofs and the ability to translate back and forth among the various ways to describe geometric properties, namely, in pictures, in words, in vector notation, and in coordinate notation.
2. Fluency with matrix algebra, including the ability to put systems of linear equation in matrix format and solve them using matrix multiplication and the matrix inverse.
3. An understanding of a parametric curve as a trajectory described by a position vector; the ability to find parametric equations of a curve and to compute its velocity and acceleration vectors.
4. A comprehensive understanding of the gradient, including its relationship to level curves (or surfaces), directional derivatives, and linear approximation.
5. The ability to compute derivatives using the chain rule or total differentials.
6. The ability to set up and solve optimization problems involving several variables, with or without constraints.
7. An understanding of line integrals for work and flux, surface integrals for flux, general surface integrals and volume integrals. Also, an understanding of the physical interpretation of these integrals.
8. The ability to set up and compute multiple integrals in rectangular, polar, cylindrical and spherical coordinates.
9. The ability to change variables in multiple integrals.

This module will be taught through classroom lectures (5hrs/week). The lecture material will be reinforced and expanded on through recitation sessions (3hrs/week) and homework.	
طرائق التقييم	
Quizzes (2) and Home-works (1 per month) = 10% Exams (2 per semester) = 40% Final Exam = 50% Total = 100%	
ج- الأهداف الوجدانية والقيمية ج1- To value hard-work to reach excellence and serve people using modern science	
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). د1- To know that it is only through knowledge we can develop our country and society towards a better life د2- To know that we need life-long learning to keep up-to-date with scientific developments د3- To know that we can overcome scientific difficulties via hard-work	

11بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1,2	10	Understanding Parametric Curves	<i>Parametric Equations for Curves</i>	Lecture	Quiz/ Exam
3,4,5	15	Thorough Comprehension of 3- D surfaces	<i>Functions of Two Variables, Tangent Approximation and Optimization</i>	Lecture	/Quiz Exam
6,7	10	Understanding of Gradient	<i>Chain Rule, Gradient and Directional Derivatives main</i>	Lecture	/Quiz Exam
8,9	10	Set up of Constrained Optimization Problems	<i>Lagrange Multipliers and Constrained Differentials</i>	Lecture	/Quiz Exam

/Quiz Exam	Lecture	<i>Double Integrals</i>	Ability to set up and compute double integral	10	10,11
/Quiz Exam	Lecture	<i>Vector Fields and Line Integrals</i>	understanding of line integrals for work and flux	5	12
/Quiz Exam	Lecture	<i>Triple Integrals</i>	Ability to set up and compute triple integral	15	13,14,15

12. البنية التحتية	
Edwards, Henry C., and David E. Penney. Multivariable Calculus. 6th ed. Lebanon, IN: Prentice Hall, 2002. ISBN: 9780130339676	1- الكتب المقررة المطلوبة
Auroux, Denis. 18.02SC Multivariable Calculus, Fall 2010. (MIT OpenCourseWare: Massachusetts Institute of Technology), http://ocw.mit.edu/courses/mathematics/18-02sc-multivariable-calculus-fall-2010 (Accessed 28 Feb, 2014). License: Creative Commons BY-NC-SA	2- المراجع الرئيسية (المصادر)
	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
http://ocw.mit.edu/courses/mathematics/18-02-multivariable-calculus-fall-2007/tools/	ب - المراجع الالكترونية, مواقع الانترنت

13. خطة تطوير المقرر الدراسي
Designing students assignments using an interactive tool like Geogebra

Course Specifications

ECE 202

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Calculus III (Linear Algebra)
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الثاني \ السنة الثانية
6. عدد الساعات الدراسية (الكلي)	105
7. تاريخ إعداد هذا الوصف	2021\06\6
8. أهداف المقرر	
<p>This module covers the basics of subjects on matrix theory and linear algebra. Emphasis is given to topics that will be useful in engineering and other disciplines, including systems of equations, vector spaces, determinants, eigenvalues, similarity, and positive definite matrices.</p>	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes
<p>The goals for this module are using matrices and also understanding them. Here are key computations and some of the ideas behind them:</p> <ol style="list-style-type: none">1. Solving $Ax = b$ for square systems by elimination (pivots, multipliers, back substitution, invertibility of A, factorization into $A = LU$)2. Complete solution to $Ax = b$ (column space containing b, rank of A, nullspace of A and special solutions to $Ax = 0$ from row reduced R)3. Basis and dimension (bases for the four fundamental subspaces)4. Least squares solutions (closest line by understanding projections)

<p>.5 Orthogonalization by Gram-Schmidt (factorization into $A = QR$)</p> <p>.6 Properties of determinants (leading to the cofactor formula and the sum over all $n!$ permutations, applications to $\text{inv}(A)$ and volume)</p> <p>.7 Eigenvalues and eigenvectors (diagonalizing A, computing powers A^k and matrix exponentials to solve difference and differential equations)</p> <p>.8 Symmetric matrices and positive definite matrices (real eigenvalues and orthogonal eigenvectors, tests for $x'Ax > 0$, applications)</p> <p>.9 Linear transformations and change of basis (connected to the Singular Value Decomposition - orthonormal bases that diagonalize A)</p> <p>10. Linear algebra in engineering (graphs and networks, Markov matrices, Fourier matrix, Fast Fourier Transform, linear programming)</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>Learn how to solve $Ax = b$</p> <p>Learn how to perform reduction, transformation, decomposition...etc</p>
طرائق التعليم والتعلم
<p>This module will be taught through classroom lectures. The lecture material will be reinforced and expanded on through recitation sessions and homeworks.</p>
طرائق التقييم
<p>Quizzes (2) and Home-works (1 per month) = 10%</p> <p>Mid Exams (2 per semester) = 30%</p> <p>Programming assignment (1 per semester) = 10%</p> <p>Final Exam (Theory)= 50%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <ul style="list-style-type: none"> - To pay attention to the theory of LA as applied to engineering problems. - To share their experience of programming a LA problem - To discuss the importance of mathematics in their study.
طرائق التعليم والتعلم
<p>Lecture method, group discussion</p> <p>Exams, portfolio of HomeWorks and projects</p>

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

- Abstract thinking
- Understand quantities in real world
- Numerical analysis

Course Specifications

ECE 302

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	EM and Applications ECE302
4. أشكال الحضور المتاحة	Online
5. الفصل / السنة	الاول 2020-2021
6. عدد الساعات الدراسية (الكلي)	7
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
تعلم مبادئ النظرية الكهرومغناطيسية	
التعرف على معادلات ماكسويل واشتقاقها	
التعرف على تطبيقات معادلات ماكسويل	
دراسة الخطوط الناقلة وانواعها	
دراسة الموجات الكهرومغناطيسية وتطبيقاتها	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
الوصف النظري + مشاهدات تطبيقية + اداء فصلي يتضمن: امتحانات، واجبات وتقارير
أ- الأهداف المعرفية
Ability to understand when we need numerical methods
أ2- Ability to understand limitations of classical mathematics
أ3- Ability to use the computer to help solving numerical methods
أ4- Understanding how to design algorithms that are efficient in time
أ5- Ability to convert algorithms to computer code
أ6- Ability to know the modern tool of symbolic programming

<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>Ability to use analyze big mathematical problems and design numerical tools for them</p> <p>Ability to advise what algorithm is most suitable for a given problem– 2ب</p> <p>Ability to use matlab as a major tools for numerical analysis– 3ب</p> <p>Ability to differentiate between slow and fast algorithms 4ب-</p>	
طرائق التعليم والتعلم	
المحاضرات النظرية + امثلة تطبيقية	
طرائق التقييم	
امتحانات قصيرة + واجبات منزلية+مشاريع صغيرة	
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- To value thinking along with hard-work to reach excellence and serve people using modern computing</p> <p>ج2- To know that numerical tools are basic for other disciplines (e.g., DSP and math), hence the need for cooperation and multi-disciplinary work</p> <p>ج3-</p> <p>ج4-</p>	
<p>د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).</p> <p>Face-to-face lectures for basic knowledge,</p> <p>Using the internet for up-to-date numerical methods</p> <p>Know that MATLAB is a fundamental tool for numerical methods.</p> <p>Using many Questions and Tutorials for brain-storming</p>	

10. البنية التحتية	
1- الكتب المقررة المطلوبة	
2- المراجع الرئيسية (المصادر)	Fundamentals of applied electromagnetics by Fawwaz Ulaby
ا- الكتب والمراجع التي يوصى بها (المجالات العلمية , التقارير ,)	
ب - المراجع الالكترونية, مواقع الانترنت	

10. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	2 +2Lab	Understanding limitations of classical mathematics	Review of algebraic equations	Lecture Lab	Quiz/ Exam
2	2 +2Lab	Understanding how to solve problems that cannot be solved analytically	Solution of nonlinear equations via random search (brute-force)	Lecture Lab	/Quiz Exam
3,4,5,6	8 +8Lab	Using different methods to solve equations	Bisection, Newton, fixed point, with MATLAB	Lecture Lab	/Quiz Exam
7,8	4 +4Lab	Gauss elimination, matrix inversion, Gauss-Seidel	Numerical solution of Linear Equations	Lecture Lab	Quiz/ Exam
9,10	4 +4Lab	Legendre, Newton methods	Polynomial Approximation	Lecture Lab	/Quiz Exam
11,12,13	6 +6Lab	Least-squares; real-life problems	Curve Fitting	Lecture Lab	/Quiz Exam
14,15	4 +4Lab	Information systems, definition of information	Numerical integration and differentiation	Lecture Lab	/Quiz Exam

Course Specifications

ECE 303

9. المؤسسة التعليمية	جامعة الكوفة
10. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
11. اسم / رمز المقرر	Antenna, Receivers, and Signals ECE305
12. أشكال الحضور المتاحة	Online
13. الفصل / السنة	الثاني 2021-2020
14. عدد الساعات الدراسية (الكلي)	6
15. تاريخ إعداد هذا الوصف	12/6/2021
16. أهداف المقرر	
تعلم اسس الهوائيات ومقدماتها	
التعرف على معادلات ماكسويل واشتقاقها	
تعلم اهم خصائص الهوائي	
دراسة انواع الهوائيات	
نمذجة ومحاكاة الهوائيات	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم
الوصف النظري + مشاهدات تطبيقية + اداء فصلي يتضمن: امتحانات، واجبات وتقارير
أ- الأهداف المعرفية
Ability to understand when we need numerical methods
Ability to understand limitations of classical mathematics -2أ
Ability to use the computer to help solving numerical methods -3أ
Understanding how to design algorithms that are efficient in time -4أ
Ability to convert algorithms to computer code -5أ
Ability to know the modern tool of symbolic programming -6أ

<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>Ability to use analyze big mathematical problems and design numerical tools for them</p> <p>Ability to advise what algorithm is most suitable for a given problem– 2ب</p> <p>Ability to use matlab as a major tools for numerical analysis– 3ب</p> <p>Ability to differentiate between slow and fast algorithms -4ب</p>	
طرائق التعليم والتعلم	
المحاضرات النظرية + امثلة تطبيقية	
طرائق التقييم	
امتحانات قصيرة + واجبات منزلية+مشاريع صغيرة	
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- To value thinking along with hard-work to reach excellence and serve people using modern computing</p> <p>ج2- To know that numerical tools are basic for other disciplines (e.g., DSP and math), hence the need for cooperation and multi-disciplinary work</p> <p>ج3-</p> <p>ج4-</p>	
<p>د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).</p> <p>Face-to-face lectures for basic knowledge,</p> <p>Using the internet for up-to-date numerical methods</p> <p>Know that MATLAB is a fundamental tool for numerical methods.</p> <p>Using many Questions and Tutorials for brain-storming</p>	

11. البنية التحتية	
1- الكتب المقررة المطلوبة	
2- المراجع الرئيسية (المصادر)	Fundamentals of applied electromagnetics by Fawwaz Ulaby
ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)	

	ب - المراجع الالكترونية, مواقع الانترنت
--	---

10. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	2 +2Lab	Understanding limitations of classical mathematics	Review of algebraic equations	Lecture Lab	Quiz/ Exam
2	2 +2Lab	Understanding how to solve problems that cannot be solved analytically	Solution of nonlinear equations via random search (brute-force)	Lecture Lab	/Quiz Exam
3,4,5,6	8 +8Lab	Using different methods to solve equations	Bisection, Newton, fixed point, with MATLAB	Lecture Lab	/Quiz Exam
7,8	4 +4Lab	Gauss elimination, matrix inversion, Gauss-Seidel	Numerical solution of Linear Equations	Lecture Lab	Quiz/ Exam
9,10	4 +4Lab	Legendre, Newton methods	Polynomial Approximation	Lecture Lab	/Quiz Exam
11,12,13	6 +6Lab	Least-squares; real-life problems	Curve Fitting	Lecture Lab	/Quiz Exam
14,15	4 +4Lab	Information systems, definition of information	Numerical integration and differentiation	Lecture Lab	/ Quiz Exam

Course Specifications

ECE 305

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	ECE305/ Digital Communication Systems
4. أشكال الحضور المتاحة	محاضرات نظرية ومحاكاة (simulation)
5. الفصل / السنة	2020-2021
6. عدد الساعات الدراسية (الكلي)	105
7. تاريخ إعداد هذا الوصف	12/6/2021
8. أهداف المقرر	
Developing knowledge of understanding and analyzing communication signals.	
Developing student the ability to process signals using the appropriate time and frequency domains.	
Understanding and analyzing several communication systems.	
Providing some basic MATLAB programs to show how to the communication systems work.	

10. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

أ- الأهداف المعرفية

- 1 Ability to understand the different types of communication signals
- 2 Ability to represent signals in time and frequency domains.
- 3 Ability to understand the definition of information and how to measure its amount.
- 4 Ability to understand the different types of source coding systems.
- 5 Ability to understand the different types of channel coding systems

ب - الأهداف المهاراتية الخاصة بالمقرر.

- 1 Ability to select the appropriate algorithm for problem solution
- 2 Ability to choose whether to use hardware or software for problem solution
- 3 Ability to analyze different parts of the digital communication systems
- 4 Ability to design different parts of the digital communication systems

طرائق التعليم والتعلم

Theoretical Lectures (4hrs/week)
Recitation (3hrs/week)
Assignments (2 per semester)

11. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	7	How to measure the information	Information Measure	Lecture	Quiz/ Exam
2	7	Knowing the types of the channels and how the information is transmitted through the channels	Channels and Mutual Information	Lecture	Quiz/ Exam

Quiz/ Exam	Lecture	Introduction to Source Coding	Understanding how to represent the information efficiently	7	3
Quiz/ Exam	Lecture	Huffman Coding	Understanding how the Huffman Coding method works	7	4
Quiz/ Exam	Lecture	Arithmetic Coding	Understanding how the Arithmetic Coding method works	7	5
Quiz/ Exam	Lecture	LZW Coding	Understanding how the LZW Coding method works	7	6
Quiz/ Exam	Lecture	Introduction to Channel Coding	Understanding the channel errors that affect the transmission	7	7
Quiz/ Exam	Lecture	MID EXAM		7	8
Quiz/ Exam	Lecture	Elementary Error Control Techniques	Understanding how the Parity check and the 2D-parity check Coding method works	7	9
Quiz/ Exam	Lecture	Linear Block Coding	Understanding how the Linear Block Coding method works	7	10
Quiz/ Exam	Lecture	Syndrome Decoding of Linear Block Codes	Understanding how to decode the linear Block Codes	7	11
Quiz/ Exam	Lecture	Cyclic Linear Block Coding	Understanding how the Cyclic Block Coding method works	7	12

Quiz/ Exam	Lecture	Syndrom Decoding of Cyclic Linear Block Codes	Understanding how to decode the cyclic Block Codes	7	13
Quiz/ Exam	Lecture	Convolutional Coding	Understanding	7	14
13. خطة تطوير المقرر الدراسي					
1) using Python programming language for software applications. 2) using FPGA for Hardware applications.					
Tutorials (via examples and solved problems, 1 per lecture)					
طرائق التقييم					
(2) Quizzes and (1) Homework per month = 20% (2) Exams per semester = 30% Final Exam = 50% Total = 100%					
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). د1- كيفية استخدام البرامجيات للتحليل والتصميم د2- كيفية استخدام الهاردوير المناسب للعمل د3- د4-					
12. البنية التحتية					
Modern Digital and Analog Communication Systems, 4 th EDITION By B.P Lathi & Zhi Ding, Oxford Press, 2010.			1- الكتب المقررة المطلوبة		
Digital Communication Systems, Simon Haykin, 1 st edition, Wiley Press, 2014.			2- المراجع الرئيسية (المصادر)		
IEEE ACCESS, IEEE Communication Magazine			أ- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)		

1) coursera, Udemy, and MIT open courses	ب - المراجع الالكترونية, مواقع الانترنت
--	---

Course Specifications

ECE 307

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Introductory to digital system laboratory 307ECE
4. أشكال الحضور المتاحة	محاضرات (نظرية وعملية)
5. الفصل / السنة	الفصل الثاني \ السنة الثالثة
6. عدد الساعات الدراسية (الكلي)	100
7. تاريخ إعداد هذا الوصف	2021\06\12
17. أهداف المقرر	
Synthesize digital systems from a library of representative components and test the designs under simulation .	
Familiarize students with Hardware Description Languages for Logic Design	
Enables students to design circuits using VHDL code	
Students will be able to program FPGA to test their designs	
Designing a testbench to implement their test strategy for their unit under test	
Transfer control algorithm into FSM using ASM	
11. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes	
أ- الأهداف المihvhjdm أ1- Ability to write a VHDL code to describe hardware أ2- Ability to Simulate and test the design أ3- Ability to program FPGA board and test the design	

<p>ب - الأهداف المعرفية الخاصة بالمقرر.</p> <p>ب1- Ability to describe the hardware in hierarchal way</p> <p>ب2- Ability to describe hardware using hardware description language</p> <p>ب3- Design control digital circuits using FSM</p>
<p>طرائق التعليم والتعلم</p>
<p>Lectures (4hrs/week)</p> <p>Lab (4hrs/week)</p> <p>Assignments (1 per semester)</p> <p>Tutorials (via examples and solved problems, 2 per lecture)</p>
<p>طرائق التقييم</p>
<p>Reports and Home-works (1 per month) = 10%</p> <p>Theory Exams (2 per semester) = 20%</p> <p>Lab Exams (2 per semester) = 20%</p> <p>Final Exam (Theory)= 40%</p> <p>Final Exam (Lab) = 10%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- To value thinking along with hard-work to reach excellence and serve people using modern computing</p> <p>ج2- To know that digital design tools, which is enable them to implement any algorithm in communication, AI, control, image processing...etc</p>
<p>طرائق التعليم والتعلم</p>
<p>Face-to-face or interactive E-learning lectures for basic knowledge,</p> <p>Using the virtual lab for FPGA synthesis and simulation</p> <p>Know that VHDL is a fundamental tool for digital design.</p> <p>Supervised expirments in the lab.</p> <p>Using many Questions and Tutorials for brain-storming</p> <p>Projects to improve creativity and teamwork</p>

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

To learn that modern tools of digital design-1د

To know that it is only through modern knowledge we can handle -2د

scientific problems to develop our country

Teamwork -3د

To know that we can overcome scientific difficulties via knowledge -4د

and hard-work

12. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	4 +4Lab+ 2 tutorial	Understanding Programmable hardware	Review of FPGA	Lecture Lab	Quiz/ Exam
2	4 +4Lab+ 2 tutorial	Introducing VHDL structure	Intro. to Digital Design with VHDL	Lecture Lab	/Quiz Exam
3	4 +4Lab+ 2 tutorial	Understanding the concepts and methods of Hierarchical design	Hierarchical design	Lecture Lab	/Quiz Exam
4	4 +4Lab+ 2 tutorial	Understanding syntax and methods of coding sequential circuits	Sequential circuit using VHDL	Lecture Lab	Quiz/ Exam
5	4 +4Lab+ 2 tutorial	Ability of utilizing libraries	Libraries, Types in Seq. circuits	Lecture Lab	/Quiz Exam
6	4 +4Lab+ 2 tutorial	How to use testbench to implement test strategies	Testbench	Lecture Lab	/Quiz Exam
7,8	8 +8Lab+ 4 tutorial	Designing control units using VHDL	FSM with VHDL	Lecture Lab	/ Quiz Exam
9	4 +4Lab+ 2 tutorial	Improve reusability of components by utilizing	Parameterized design		

			parameterized concepts		
		Project	Design and implement and discuss full digital circuit project	4 +4Lab+ 2 tutorial	10,11,12

11. البنية التحتية	
Circuit Design and Simulation with VHDL 2nd ed. - V. (Pedroni (MIT, 2010	1- الكتب المقررة المطلوبة
Quartus II Prime introduction .DE1 SoC user manual	2- المراجع الرئيسية (المصادر)
	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
Visit Intel website for further info and courses	ب- المراجع الالكترونية, مواقع الانترنت

10. خطة تطوير المقرر الدراسي
We may improve the outcome of the course by integrating the skills obtained to implement real problem circuits such as embedded systems

Course Specifications

U 301

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	اللغة الانكليزية U 301
4. أشكال الحضور المتاحة	محاضرات
5. الفصل / السنة	الفصل الاول \ السنة الثالثة
6. عدد الساعات الدراسية (الكلي)	30
7. تاريخ إعداد هذا الوصف	13/6/2021
10. أهداف المقرر	
	Improve student's ability to speak confidently
	Improving student's skills in writing academic English essays
	Developing student's ability to read academic texts
	Developing student's ability to listen to different English conversations
	Increase student's knowledge in term of academic English vocabulary

11. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

<p>أ- الأهداف المعرفية</p> <p>1- Ability to use correct tense in sentences</p> <p>2- Ability to write different formats of sentences</p> <p>3- Ability to use academic vocabulary</p> <p>4- Ability to listen to and understand a conversation</p> <p>5-</p> <p>6-</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>1ب - Gain skills to write a report or a research</p> <p>2ب - Gain reading skills such as skimming and scanning a text</p> <p>3ب - Ability to handle a conversation in English</p> <p>4ب-</p>
<p>طرائق التعليم والتعلم</p>
<p>Lectures (2hrs/week)</p> <p>Lab (hrs/week)</p> <p>Assignments (1 per semester)</p> <p>Tutorials (explaining the subject, solve exercises , 1 per lecture)</p>
<p>طرائق التقييم</p>
<p>Quizzes (5) and Home-works (2 per month) = 15%</p> <p>Theory Exams (2 per semester) = 25%</p> <p>Oral Exams (1 per semester) = 10%</p> <p>Final Exam (Theory)= 50%</p> <p>Final Exam (Oral) = 0%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- learn a new language that is used by a large number of people in the world</p> <p>ج2- knowing about other's culture and respect their traditions when you learn their language</p> <p>ج3-</p> <p>ج4-</p>

طرائق التعليم والتعلم
Face-to-face lectures for basic knowledge, and give different examples
طرائق التقييم
Answer direct questions during lectures
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). 1- 2- 3- 4-

13. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
2&1	2+2	Naming tenses Auxiliary verbs Questions and answers Negative sentences Part of speech Words that go together	Unit 1	Lecture Tutorial	Quiz exam
2&3	2+2	Present simple and continuous Present passive State verbs How to answer how often Positive and negative adjectives How to use free time activities in present	Unit 2	Lecture Tutorial	Quiz exam
4&5	2+2	Past simple and continuous Past passive Past perfect	Unit 3	Lecture Tutorial	Quiz exam

			Spelling and pronunciation of verbs in past tense Lost sounds		
Quiz exam	Lecture Tutorial	Unit 4	Use model verbs and related verbs in advice , obligation and permission Phrasal verbs	2+2	6&7
Quiz exam	Lecture Tutorial	Unit 5	Future simple and continuous Use going to in future form Future possibilities	2+2	8&9
Quiz exam	Lecture Tutorial	Unit 6	Information question Word building suffix and prefixes Changing word stress	2+2	10&11
Quiz exam	Lecture Tutorial	comparison	Comparative and superlative How they can be used in writing a report	2+2	12&13

14. البنية التحتية	
Intermediate student's book new head-way By John and Liz Loasr	1- الكتب المقررة المطلوبة
Intermediate Work book with key new head-way by John and Liz Loasr	2- المراجع الرئيسية (المصادر)
The oxford English grammar by Sidney Greenbaum	أ- الكتب والمراجع التي يوصى بها (المجالات العلمية , التقارير ,)
	ب - المراجع الالكترونية, مواقع الانترنت

Course Specifications

U 302

1. المؤسسة التعليمية	جامعة الكوفة
2. القسم العلمي / المركز	الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	اللغة الانكليزية
4. أشكال الحضور المتاحة	محاضرات
5. الفصل / السنة	الفصل الثاني \ السنة الثالثة
6. عدد الساعات الدراسية (الكلي)	30
7. تاريخ إعداد هذا الوصف	13/6/2021
10. أهداف المقرر	
Improve student's ability to speak confidently	
Improving student's skills in writing academic English essays	
Developing student's ability to read academic texts	
Developing student's ability to listen to different English conversations	
Increase student's knowledge in term of academic English vocabulary	

11. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

<p>أ- الأهداف المعرفية</p> <p>1- Ability to use correct tense in sentences</p> <p>2- Ability to write different formats of sentences</p> <p>3- Ability to use academic vocabulary</p> <p>4- Ability to listen to and understand a conversation</p> <p>5-</p> <p>6-</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>1ب - Gain skills to write a report or a research</p> <p>2ب - Gain reading skills such as skimming and scanning a text</p> <p>3ب - Ability to handle a conversation in English</p> <p>4ب-</p>
<p>طرائق التعليم والتعلم</p>
<p>Lectures (2hrs/week)</p> <p>Lab (hrs/week)</p> <p>Assignments (1 per semester)</p> <p>Tutorials (explaining the subject, solve exercises , 1 per lecture)</p>
<p>طرائق التقييم</p>
<p>Quizzes (5) and Home-works (2 per month) = 15%</p> <p>Theory Exams (2 per semester) = 25%</p> <p>Oral Exams (1 per semester) = 10%</p> <p>Final Exam (Theory)= 50%</p> <p>Final Exam (Oral) = 0%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- learn a new language that is used by a large number of people in the world</p> <p>ج2- knowing about other's culture and respect their traditions when you learn their language</p> <p>ج3-</p> <p>ج4-</p>

طرائق التعليم والتعلم
Face-to-face lectures for basic knowledge, and give different examples
طرائق التقييم
Answer direct questions during lectures
د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي). 1- 2- 3- 4-

12. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
2&1	2+2	Present perfect simple Present perfect continuous Present perfect in passive Time expression Likes and dislikes	Unit 7	Lecture Tutorial	Quiz exam
2&3	2+2	Verb pattern Gerund and infinitives Verb +infinitive Adjective +infinitive Body language idioms	Unit 8	Lecture Tutorial	Quiz exam
4&5	2+2	If conditional (zero, first, second and third conditional) Causative form Words with similar meaning	Unit 9	Lecture Tutorial	Quiz exam
6&7	2+2	Noun phrase Possessives Use all and everything	Unit 10	Lecture Tutorial	Quiz exam

			Reflexive pronoun and each other Compound nouns		
Quiz exam	Lecture Tutorial	Unit 11	Modals of probability Present and past modals Looks like / looks	2+2	8&9
Quiz exam	Lecture Tutorial	Unit 12	Reported speech Reported thought Reported questions	2+2	10&11
Quiz exam	Lecture Tutorial	Relative clauses	Relative clauses Defining and non-defining clauses Used to Be used to/ get used to	2+2	12&13

13. البنية التحتية	
Intermediate student's book new head-way By John and Liz Loasr	1- الكتب المقررة المطلوبة
Intermediate Work book with key new head-way by John and Liz Loasr	2- المراجع الرئيسية (المصادر)
The oxford English grammar by Sidney Greenbaum	أ- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
	ب - المراجع الالكترونية , مواقع الانترنت

14. خطة تطوير المقرر الدراسي

Course Specifications

U 401

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	English I(Upper-Intermediate) 4rth Stage
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الأول \ السنة 2020-2021
6. عدد الساعات الدراسية (الكلي)	60
7. تاريخ إعداد هذا الوصف	2021\06\6

10. أهداف المقرر
<p><u>Course Objectives :</u></p> <p>The course is intended to accomplish its goal in one full academic term of 15 weeks through developing students' language skills to:</p> <ol style="list-style-type: none">1. Understand long complex, live or broadcast, speech.2. Speak fluently without searching for language, communicate effectively in social and professional situations, and express ideas and opinions and relate them to those of other speakers.3. Understand long and complex factual and literary texts, with different styles, understand specialized articles and long technical instructions.4. Write long, clear, well-structured text to express points of view.5. Exhibit good grammatical control. 6. Benefit from the skills possessed while attempting international tests such as IELTS .

Learning Outcomes

Student Learning Outcomes (SLOs) are descriptions of what students will know or be able to do with the language as a result of the 15 weeks of instruction:

- 1 .Can understand standard spoken language, live or broadcast, on both familiar and unfamiliar topics.
- 2 .Can use the language fluently, accurately and effectively on a wide range of general, academic,, communicate with good grammatical control without much sign of having to restrict what he/she wants to say.
- 3 .Can read with a high degree of independence, obtain information, ideas and opinions.
- 4 .Can write clear, detailed texts on a variety of subjects related to his/her field of interest.
- 5 .Can exhibit good grammatical control; occasional 'slips' or non-systematic errors and minor flaws in sentence structure may still occur.

طرائق التعليم والتعلم

Lectures (2hrs/week)

Assignments (1 per semester)

Tutorials (via examples and solved problems, 1 per lecture)

طرائق التقييم

Quizzes (4 per Semester) and Home-works = 50%

Final Semester Exam = 50%

Total = 100%

18. بنية المقرر للفصل الاول

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
2(1,2)	4	overview of tense system active and passive auxiliary verbs + compound nouns word formation	Unite1	Online Lecture	Quiz/ Exam
2 (3,4)	4	Understanding how to use present perfect simple and continuous + synonyms hot' verbs: take and 'put exclamations including countable) (and uncountable	Unite 2	Online Lecture	/Quiz Exam
,5,6	4	narrative tenses (past ,simple past continuous and past perfect +word formation with suffixes and prefixes	Unite3	Online Lecture	/Quiz Exam
,8,7	4	Passive and Active in all tenses and 'get' stylish in passive countable and uncountable nouns	Unite 4	Online Lecture	Quiz/ Exam
9,10	4	Future forms tense usage in clauses	Unite 5	Online Lecture	/Quiz Exam
11,12	4	Expressing the Quantity and the differences between Make and Do	Unite 6	Online Lecture	/Quiz Exam
13,14,15	6	The usage of Auxiliary verbs and all the phrasal verbs of the 1 st semester unites besides overview and +2 hours for 2 quizzes for the evaluation of 1 st semester	Overview and the phrasal verbs of the unite 3,4,5 and 6 Use of gerunds and infinitives and the Vocabulary	Online Lecture	/ Quiz Exam

10. البنية التحتية	
Soars, Liz & John Soars. New Headway Plus: Upper-Intermediate Workbook. Special Edition. OUP: Oxford , 2014.	1- الكتب المقررة المطلوبة
Soars, Liz & John Soars. New Headway Plus: Upper-Intermediate Student's Book. Special Edition. OUP : Oxford, 2014	2- المراجع الرئيسية (المصادر)
Cutting- Edge Third Edition : Upper-Intermediate Workbook, JANE COMYNS CARR FRANCES EALES AND DAMIAN WILLIAMS, Cambridge 2018	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
Use google search for websites of : Upper-Intermediate English Sources especially BBC learning English and : English Language Teaching Home Page Oxford University Press (oup.com)	ب - المراجع الالكترونية, مواقع الانترنت

Course Specifications

ECE 410

جامعة الكوفة	1. المؤسسة التعليمية
الهندسة الالكترونية والاتصالات	2. القسم العلمي / المركز
ECE 410/ Optical Signals, Devices, and Systems	3. اسم / رمز المقرر
محاضرات (نظرية) + مختبر (عملي)	4. أشكال الحضور المتاحة
الفصل الاول \ السنة الرابعة	5. الفصل / السنة
75 – نظري 30- عملي	6. عدد الساعات الدراسية (الكلي)
12/6/2021	7. تاريخ إعداد هذا الوصف

This module covers the fundamentals of optical signals and modern optical devices and systems from a practical point of view

Its goal is to help students develop a thorough understanding of the underlying physical principles such that device and system design and performance can be predicted, analyzed, and understood.

The module will provide the knowledge and skills for students in two key themes of optical fiber and optical wireless communications. These are essential topics for communications pathway in electrical and electronics engineering program that cover the fundamentals and advanced optical system designs in both fiber and wireless systems.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

أ- الأهداف المعرفية

- 1- Ability to understand difference between RF and optical systems
- 2- Ability to understand the waveguide theory
- 3- Ability to design the optical communication system, including the transmitter, channel, and receiver.
- 4- Ability to understand the signal degradation effects in optical fibre, including the attenuation and dispersion effects.
- 5- Ability to understand characteristics of optical sources (Laser and LED) and photodetectors.
- 6- Ability to use optical multiplexers to enhance the data transmission rate

ب - الأهداف المهاراتية الخاصة بالمقرر.

- 1- Introduction to the optical wire/wireless communications system and the overall design
- 2- Identification of system elements, subsystems and required specification
- 3- Optical transmitter design, optical propagation channel, effect on the optical fibre, effect on the optical wireless channel, noise and losses, optical receiver design.
- 4- System design includes: multiple access techniques, system design and performance evaluation, analysis of the practical and industrial optical communications system

طرائق التعليم والتعلم

- Lectures (5hrs/week)
- Lab (2hrs/week)
- Assignments (1 per semester)
- Tutorials (via examples and solved problems, 1 per lecture)

طرائق التقييم
<p>Theory Course: Quizzes (1 per month) and Home-works (1 per week) = 20% Exams (2 per semester) = 20% Practical Course (Lab): Quizzes (1 per month) and Experiment's Report (1 per week) = 10% Final Exam = 40% (Theoretical Exam) + 10% (Practical Exam) Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>ج1- To value hard-work to reach excellence and serve people using modern science</p> <p>ج2- To know that cooperation with other disciplines (e.g., engineering or health sector) is necessary via multi-disciplinary knowledge</p> <p>ج3-</p> <p>ج4-</p>
طرائق التعليم والتعلم
<p>Face-to-face lectures for basic knowledge, Using the internet for up-to-date optical systems applications Be familiar to use simulation tools to model and implement the optical communication networks, such as OptiSystem & MATLAB. Using Tutorials for brain-storming</p>
<p>د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).</p> <p>د1- To learn that modern applications of optical systems in high data rate transmission links, health, security, and commercial applications for career opportunities</p> <p>د2- To know that it is only through knowledge we can develop our country and society towards a better life</p> <p>د3- To know that we need life-long learning to keep up-to-date with scientific developments</p> <p>د4- To know that we can overcome scientific difficulties via hard-work</p>
<p>15. بنية المقرر</p>

Week	Hours/ week	Topics Covered	Lab. Experiment Assignments	Assessment
1	5 / Lecture 2 / Lab	Parameters of Light Waves; Index of Refraction; Snell's Law; Polarization of Light and Electromagnetic Spectrum.	Linked to theoretical lecture	Quiz / Exam
2	5 / Lecture 2 / Lab	Block Diagram of an Optical Communication System; Advantages of Optical Communication System.	Linked to theoretical lecture	Quiz / Exam
3	5 / Lecture 2 / Lab	Optical Fiber Structure and its Parameters; Propagation of Light in Optical Fiber; Some Parameters of an Optical Fiber; Types of Optical Fiber; Advantage Types of Optical Fiber.	Linked to theoretical lecture	Quiz / Exam
4	5 / Lecture 2 / Lab	Optical fiber materials; Optical Fiber Waveguides; TE and TM modes; multi-mode theory; single mode requirements	Linked to theoretical lecture	Quiz / Exam
5	5 / Lecture 2 / Lab	Types of Dispersion: intermodal dispersion (material & waveguide), calculations and methods of reduction; Total Fiber Dispersion.	Linked to theoretical lecture	Quiz / Exam
6	5 / Lecture 2 / Lab	Attenuation; Attenuation Sources: absorption, bending, and mode coupling; calculations and methods of reduction.	Linked to theoretical lecture	Quiz / Exam
7	5 / Lecture 2 / Lab	Optical time domain reflectometry (OTDR), principle of operation, theoretical model, practical results.	Linked to theoretical lecture	Quiz / Exam
8	5 / Lecture 2 / Lab	Free-space- optics (FSO) channel; weather effects; theoretical model; awgn and multi-path model.	Linked to theoretical lecture	Quiz / Exam
9	5 / Lecture 2 / Lab	Emission and absorption of light, Einstein Coefficients, simple energy level system , coherence, optical sources.	Linked to theoretical lecture	Quiz / Exam
10	5 / Lecture 2 / Lab	Light Emitter and its Performance Characteristics; Light Emitting Diode (LED): principles of operation, characteristics, coupling efficiency.	Linked to theoretical lecture	Quiz / Exam
11	5 / Lecture 2 / Lab	Laser Principles of Operation; Characteristics; Laser Modes; External Quantum Efficiency; Dynamic Response; Frequency Chirp; Noise Sources.	Linked to theoretical lecture	Quiz / Exam
12	5 / Lecture 2 / Lab	Photodetector Operation; Characteristics; Photodetector Types: PN, PIN, APD, and phototransistor; Parameters and Comparisons; Response Time and Bandwidth; Noise Contribution and SNR Calculations in PIN Receivers; Receiver Sensitivity.	Linked to theoretical lecture	Quiz / Exam
13	5 / Lecture 2 / Lab	Optical Power and Rise Time Budgets. Over all response; Wavelength-division-multiplexing (WDM) system.	Linked to theoretical lecture	Quiz / Exam
14	5 / Lecture 2 / Lab	Optical Amplifier General Concepts and Limitations; Amplifier Examples; Erbium-Doped Fiber Amplifier; EDFA: EDFA Architecture, EDFA Power Conversion Efficiency and Gain, EDFA Quantum Conversion, EDFA Noise Analysis; Optical Noise Figure; Optical Amplifier Applications.	Linked to theoretical lecture	Quiz / Exam

15	5 / Lecture 2 / Lab	Bit error rate (BER); theoretical principle; relation between BER and SNR; Eye diagram; Jitter and rise time. Q-factor; ISI effect; power penalty; Estimation of BER.	Linked to theoretical lecture	Quiz / Exam
16		Exam	Exam	

16. البنية التحتية	
1- الكتب المقررة المطلوبة	
2- المراجع الرئيسية (المصادر)	V. S. Bagad, Optical Fiber Communications: Technical Publications, 2009.
ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)	1- Yariv, A. Optical Electronics in Modern Communications. 5th ed. New York, NY: Oxford University Press, 1997. ISBN: 0195106261. 2- G. Keiser, Optical fiber communications, 4 th ed. New York, NY: McGraw-Hill Companies, 2011, pp. xxviii, 654 p. 3- G. P. Agrawal, Fiber-optic communication systems, 4th ed. New York: Wiley, 2010. 4- K. S. Thyagarajan and A. Ghatak, Fiber Optic Essentials: Wiley, 2007. 5- J. Wilson and J. F. B. Hawkes, Optoelectronics, an introduction, 2nd ed. New York: Prentice-Hall, 1989.
ب - المراجع الالكترونية, مواقع الانترنت	Warde, Cardinal. 6.637 Optical Signals, Devices, and Systems, Spring 2003. (MIT OpenCourseWare: Massachusetts Institute of Technology), https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-637-optical-signals-devices-and-systems-spring-2003/index.htm (Accessed 1 Jun, 2021).

17. خطة تطوير المقرر الدراسي
1. Follow up the latest developments in scientific research related to the course. 2. Updating the course by following the vocabulary of the specialized international universities curricula. 3. Take into account the needs of the labor market and seek to meet them by reviewing the curriculum vocabulary.

Course Specifications

ECE 408

COURSE DESCRIPTION: The knowledge, understanding and skills gained during the course can be applied to a range of environments. It brings together resources, skills, technology and ideas, to realize benefits or achieve objectives, and operates within the multiple project constraints of cost, scope, time and quality requirements. Students on this course will become familiar with leading thinking and emerging research in the field of project management to benefit their continued professional development.

GOALS/OBJECTIVES:

- 1-Understand the terms and processes currently used in projects and determine the best approaches, tools and techniques to use
- 2- Understand stakeholders better and how to engage them throughout the life of the project
- 3-Recognise the challenges of change management and some ways of embedding project driven change to organisations
- 4-Start and finish projects successfully by using the methods described

STUDENT LEARNING OUTCOMES

- 1- How to plan, organise and implement projects
- 2-Ways to successfully engage with stakeholders
- 3-Key tips for managing risks and change

COURSE SCHEDULE

Topic	Hours
1-Introduction to Project Management	4
2- Planning Techniques	2
3-Types of Planning Techniques (Bar Chart)&(C.P.M)	2
4- Arrow Net Work Techniques	2
5-Precedence Net Work Techniques	2

6-Program Evaluation and Review Technique (PERT)	2
7-Line of Balance (L.O.B)	2
8- Engineering Contracts	2
9- Project Execution Approaches	2
10- Method of Tendering	2
11- Cash Flow Diagram	2
12- Time-Cost relationship	2
13- Operation Research	2
14- Linear Programming & its application	2

Table 1: Project Management Strategies for Achieving Outcomes and Assessment Methods

Learning Outcomes	Strategies for Achieving Outcomes	Assessment Methods
1. . Number of steps to find the critical path.	Steps if the student can apply through it and find the critical path	Midterm Exam
2. Calculate the duration of the project and critical path. Using the Bar-chart method.	Train student in finding the critical path using the Bar-chart method	Midterm Exam
3. Known and a number of specialized project management tasks.	Remember and save Known and a number of specialized project management tasks	Midterm Exam
4.The most important duties of construction administration	Remember and save The most important duties of construction administration	Midterm Exam
5.Calculate the duration ,critical path and draw the project using Arrow network method	Train student Calculate the duration ,critical path and draw the project using Arrow network method	Midterm Exam

6. Calculate the duration ,critical path and draw the project using Nodes network method	Train student Calculate the duration ,critical path and draw the project using Nodes network method	Midterm Exam
--	---	--------------

Course Specifications

ECE 406

COCOURSE SPECIFICATION

Provides the student with an introduction to the power electronic circuits including the characteristics of power semi-conductor devices (such as power diode, SCR, MOSFET, IGBT, TRAIC and DAIC), uncontrolled rectifiers, Controlled rectifiers ,commutation techniques, AC voltage controllers, DC choppers, inverters, PWM techniques and introduction to renewable energy sources such as Photovoltaic and motor drives.

1-Teaching Institution	University of Kufa
2- University Department /Center	Department of Electrictronic & Communication Engineering
3- Course Title /Code	Power Electronics / ECE 406
4- Program to which it Contributes	
5- modes of attendance offered	On line attendance
6- Semester/ year	1st course /4th stage
7- Number of hours tuition (total)	75 hourse
8- Date of production/revision of this specification	12-6-2021
9. Aims of the Course	
10-Learning outcomes, Teaching, Assessment methods	

a.1- Equip the student with the basic understanding of the power semiconductor devices their operating principles along with their control circuitry
a-2 Provide the knowledge in the wide range of power electronic converter circuits for ACDC, DC-DC and DC-AC power conversion which are generally employed in various consumer and industrial electronic applications

1-It's important that students become familiar with ways to think properly with respect to using of power electronics devices and their application in power electronic converters

2-Recognize the need for applying power electronics to engineering problems

3-Understanding of the power electronics converters and there advantages disadvantages and applications

B. Subject-specific skills

B.1. Analyses and synthesize different power electronic converters based on their .applications

B.2. Waveform analysis of the power electronic converter operation modes mathematically.

Teaching and Learning Methods

Through the presentation of a theoretical explanation with the aid of white board and 'Data Show', to illustrate syllabus (examples and exercises) and using text books

Assessment methods

For the purpose of evaluation is used

1- Method of rapid tests and snap

2- Identify some homework

3. Quarterly exams

C. Thinking Skills

1- explain the required terms .

2-to discuss ideas and share knowledge .

3-methodology and use of text books .

11-Course Structure first term .

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-5	25	A.1	Introduction to Power electronics system and Classification of power semiconductor devices	1-Power Electronics . vs ,linear electronics Elements of Power ,Electronics 2- difference . between ideal switch and practical ,switch 3- switching power . ,loss	,Quiz, HW Exam

				4- Switch Power . ,Diodes Characteristics Reverse Recovery Characteristics SCR, GTO, and TRIAC 5- Power BJT, . ,Power MOSFET, and Power IGBT Characteristics	
6-10	25	A.1 A.2	DC Chopper converters devices and their applications	1-Linear Conversion vs Switching ,Conversion 2- Pulse Width . ,Modulation 3- Step-Down Buck . Chopper Step -Up ,Boost Chopper .Buck-Boost Choppers 4- DC Choppers for . ,Solar Cell Systems 5- Buck and Boost . Converters Design for PV system	,Quiz, HW Exam
11-15	25	A.1 A.2 A.3	On-Off control AC choppers, Phase control AC Choppers	1- AC-AC converter . ,categories 2- On-Off control AC . choppers, Phase control AC Choppers, Single Phase AC Controllers, Half wave AC phase controller Unidirectional) ,(Controller 3- Single Phase Full . Wave Ac Voltage Controller with R ,and RL loads 4- Applications of Ac Voltage Controllers for	,Quiz, HW Exam

12-Infrastructure .					
:Required reading CORE TEXTS · COURSE MATERIALS · OTHER ·			Power Electronics: Circuits, Devices and ,Applications (3rd Edition) by M. H. Rashid .2003 Power Electronics: Converters, Applications, and .Design by Ned Mohan, 2002 First Course on Power Electronics and Drives by .Ned Mohan, 2003 ,Electric Motors and Drives: Fundamentals .Types and Applications by Austin Hughes, 2006		
Special requirements (include for ,example workshops, periodicals (IT software, websites					
Community-based facilities include for example, guest) Lectures , internship , field (studies					
				Lighting systems and Speed control of .induction motors	

Course Specifications

ECE 401

1. المؤسسة التعليمية	كلية الهندسة
2. القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
3. اسم / رمز المقرر	Project
4. أشكال الحضور المتاحة	محاضرات (نظرية)
5. الفصل / السنة	الفصل الأول والثاني \ السنة الرابعة
6. عدد الساعات الدراسية (الكلي)	68
7. تاريخ إعداد هذا الوصف	2021\06\12
8. أهداف المقرر	
Understanding basics of Raspberry Pi microcontroller	
Understanding basic skills for programming raspberry Pi	
Understanding input and output PINs of Raspberry Pi	
Basics of data science in python	
Data Visualization - Figure Design	
Advanced of data science in python	
Writing an article according to IEEE format	
Understanding an academic writing and get their skills	
How to manage references with Mendeley software and integrate with MS-Word	
Understanding critical reading and writing	
Get skills regarding searching, exploring and accessing knowledge	
Getting skills concerning how to prepare, make a project presentation via MS-Power point	
Understanding How to make an academic poster	
Understanding how to structure, communicate, select, visualize your data (Figure Design)	
Understanding How to well-Structure an article	

<p>11. مخرجات المقرر وطرائق التعليم والتعلم والتقييم Learning Outcomes</p>
<p>أ- الأهداف المعرفية</p> <ol style="list-style-type: none"> 1- Ability to install new operating system for Raspberry Pi. 2- Ability to program Raspberry Pi for reading data from ordinary sensor, like temperature/humidity sensor. 3- Ability to program Raspberry Pi for sending data to ordinary step motor and/or display. 4- Ability to recognize timing of signals. 5- Ability to understand key concepts such as boolean logic, control flow and loops in Python. 6- Ability to visualize real data with matplotlib's functions. 7- Ability to know new data structures such as the dictionary and the Pandas DataFrame. 8- Ability to read and write critically 9- Ability to Structuring, logically communicate, objectively you writing style and context 10- managing, getting notes, citing, make a bibliography for your references in an article 11- Ability to search, explore, access, alert, keep up to date with the development of the existing knowledge with different academic search engines such as (IEEE Explore, Science Direct, and Google Scholar). 12- Ability to select, design figure to visualize your data, concept, and images
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <ol style="list-style-type: none"> 1-
<p>طرائق التعليم والتعلم</p>
<p>Lectures (2hrs/week) Assignments (1 per lecture) Tutorials (via examples and solved problems, 1 per lecture)</p>
<p>طرائق التقييم</p>
<p>Attendance = Quizzes (2) (1 per month) =</p>

Homework =

Lab =

Final Exam =

Total = 100%

ج- الأهداف الوجدانية والقيمية

To value Raspberry Pi microcontroller hardware.

To know skills of coding in Raspberry Pi environment.

To know skills of reading, processing, and writing data withing Raspberry Pi environment.

طرائق التعليم والتعلم

1- Online lectures for basic knowledge,

2- In-Lab lectures for working on Raspberry Pi microcontroller, sensors, and step motors.

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

1- To learn that embedded systems programming essentials.

2- To learn writing c code for reading and writing data from/to PINs and microelectronic devices.

3- The intermediate python course is crucial to your data science curriculum. Learn to visualize real data with matplotlib's functions and get to know new data structures such as the dictionary and the Pandas DataFrame. After covering key concepts such as boolean logic, control flow and loops in Python, you're ready to blend together everything you've learned to solve a case study using hacker statistics.

12. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	2	Basics of Raspberry Pi and Arduino	Review of main hardware including Raspberry Pi and Arduino	Lecture	Homework
2	2	Installation of Raspberry Pi skills	Installation of operating system for Raspberry Pi	Lecture	Homework
3	2	Reading data from temp-humidity sensor.	Reading data from a temperature sensor.	Lecture	Homework
4	2	Plotting data with Python	Plotting data	Lecture	Homework
5	2	Learning basic Linux command-line instructions	Learning basic Linux command-line instructions	Lecture	Homework
6	3	Learning the basic concepts of how can program using python	Python Basic concepts	Lecture	
7	3	Learning the ways of data visualization	Data visualization	Lecture	
8	3	Learning how can engage with 1D,2D array using Numpy package	Numpy package and its modules	Lecture	
9	3	Learning how can the series, dataframes to be used effecinetly using pandas package	Padas package and its modules	Lecture	

11. خطة تطوير المقرر الدراسي
1- We can improve this subject by enhancing computer labs with computers, Raspberry Pi 4/Arduino hardware, sensors, and other accessories.

2- We aim to make the study and understanding the intermediate Python for Data Science as starting point to have the machine learning algorithms in the future to be applied practically in the final project.

12. البنية التحتية	
<i>The Official Raspberry Pi Beginner's Guide 2019</i> Intermediate Python for Data Science	1- الكتب المقررة المطلوبة
1- www.projects.raspberrypi.org/en/projects/raspberry-pi-getting-started 2- https://learn.datacamp.com/courses/intermediate-python	2- المراجع الرئيسية (المصادر)
	ا- الكتب والمراجع التي يوصى بها (المجلات العلمية , التقارير ,)
www.magpi.raspberrypi.org/books/beginners-guide-4th-ed	ب - المراجع الالكترونية, مواقع الانترنت

Course Specifications

ECE 403

19.	المؤسسة التعليمية	كلية الهندسة
20.	القسم العلمي / المركز	قسم الهندسة الالكترونية والاتصالات
21.	اسم / رمز المقرر	شبكات الحاسوب Computer Networks ECE403
22.	أشكال الحضور المتاحة	محاضرات (نظرية وعملية)
23.	الفصل / السنة	الفصل الأول \ السنة الثانية
24.	عدد الساعات الدراسية (الكلي)	105
25.	تاريخ إعداد هذا الوصف	2021\06\6
26.	أهداف المقرر	
Understand global network infrastructure and its principles design		
Advantages of networks, types of network and topologies		
Ability to choose which the appropriate transmission media for different types of networks		
Ability to diagnostic different types of network issues		
Design networks based on managing range of IP address		
Using different types of routing protocols for small and large scale networking		
Ability to demonstrate the Internet topology and how ISPs are connected		

13.	مخرجات المقرر وطرائق التعليم والتعلم والتقييم	Learning Outcomes
-----	---	-------------------

<p>أ- الأهداف المعرفية</p> <p>1- Ability to understand what type of network topology is required</p> <p>2- Ability to understand limitations of different network protocols</p> <p>3- Ability to choose the appropriate network transmission media for different networks</p> <p>4- Understand when and where each of the application layer protocols are used</p> <p>5- Design a network based on managing a range of IP address</p> <p>6- Ability to understand the difference between types of attacks and their consequences</p>
<p>ب - الأهداف المهاراتية الخاصة بالمقرر.</p> <p>1ب - Ability to design different types of networks based on size and requirements</p> <p>2ب - Ability to define the risks of different types of network attacks</p> <p>3ب - Ability to manage small to large scale networks</p>
<p>طرائق التعليم والتعلم</p> <p>Lectures (2hrs/week)</p> <p>Lab (2hrs/week)</p> <p>Assignments (1 per semester)</p> <p>Tutorials (via examples and solved problems, 1 per lecture)</p>
<p>طرائق التقييم</p> <p>Quizzes (2) and Home-works (1 per month) = 10%</p> <p>Theory Exams (2 per semester) = 30%</p> <p>Lab Exams (2 per semester) = 10%</p> <p>Final Exam (Theory)= 40%</p> <p>Final Exam (Lab) = 10%</p> <p>Total = 100%</p>
<p>ج- الأهداف الوجدانية والقيمية</p> <p>1ج - To value thinking along with hard work to reach excellence and serve people using modern computing</p> <p>2ج - To know that Computer Networks has emerged in our daily life and it is fundamental for every IoT applications</p>
<p>طرائق التعليم والتعلم</p> <p>Face-to-face lectures for basic knowledge,</p> <p>Using the internet for up-to-date network tools</p> <p>Using different tools and Softwares to develop practical skills such as packet tracer, Wireshark, and VirtualBox.</p> <p>Using many Questions and Tutorials for brain-storming</p>

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي).

د1- To learn that students can develop their skills using various types of open source tools that are related to networking

د2- To know that it is only through modern knowledge we can handle scientific problems to develop our country

د3- To know that we need life-long learning to keep up-to-date with scientific developments

د4- To know that we can overcome scientific difficulties via knowledge and hard-work

14. بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة / أو الموضوع	طريقة التعليم	طريقة التقييم
1	5 +2Lab	Explain the advantages of using networks and describe types of network and topologies	Introduction and Overview	Lecture Lab	Quiz/ Exam
2	5 +2Lab	Explain and critique the OSI protocol stack and encapsulation process	Network Protocols Stacks	Lecture Lab	/Quiz Exam
3	5 +2Lab	Explain guided and unguided transmission media	Transmission Media	Lecture Lab	/Quiz Exam
4	5 +2Lab	Understand the difference between network devices and the major Ethernet standards	TCP/IP	Lecture Lab	Quiz/ Lab
5	5 +2Lab	IP, ICMP, ARP, RARP, TCP, and UDP	Internet Layer	Lecture Lab	/Quiz Exam
5,6,7	15 +6Lab	Design a network based on managing IP addresses and NATing	IP addresses	Lecture Lab	/Quiz Exam
8,9,10	15 +6Lab	Understand when and where each of the application layer protocols are used	Application Layer Protocols	Lecture Lab	/ Quiz Exam
11,12	10 +4Lab	Static and dynamic routing	Routing Protocols	Lecture Lab	/ Quiz Exam
13	5 +2Lab	Internet topology	The Internet	Lecture Lab	/ Quiz Exam
14,15	10 +4Lab	confidentiality, integrity, and availability	Network security and threats	Lecture Lab	/ Quiz Exam

10. خطة تطوير المقرر الدراسي
We can improve this subject by providing a more professional laboratory by using a virtual lab that required a high-performance computer.

10. البنية التحتية	
Andrew S. Tanenbaum, " Computer Networks" 5 th .edition, Prentice Hall, 2010	1- الكتب المقررة المطلوبة
T. Lammle, "CCNA: Cisco Certified Network Associate .Study Guide" 6 th edition, Wiley, 2007	2- المراجع الرئيسية (المصادر)
Mark A. Dye, Rick McDonald, and Antoon W. Ruffi, Network Fundamentals CCNA Exploration Companion Guide, Cisco Press, 2011	أ- الكتب والمراجع التي يوصى بها (المجالات العلمية , التقارير ,)
Use google search for websites of Computer network	ب - المراجع الالكترونية, مواقع الانترنت