

Course Description Form

1. Course Name:	
Microprocessor	
2. Course Code:	
CE 2204	
3. Semester / Year:	
Second Semester /2024	
4. Description Preparation Date:	
١٦/٣/٢٠٢٤	
5. Available Attendance Forms:	
In-person (classrooms)	
6. Number of Credit Hours (Total)	
30 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Shaimaa Hameed Abd Email: shaymaa.h.abed@uotechnology.edu.iq	
8. Course Objectives	
Course Objectives	<p>Objectives of the study subject: The microprocessor curriculum aims to teach the student the basic principles of microprocessors, the basic definitions of the hardware components and software used in designing the microprocessor, the types of processors, their origin and development, and the types of modern processors and their programming. Then the curriculum moves to enable the student to learn about the structure of the microprocessor and how it works internally, and the most important basic parts that complement the work of the microprocessor, and to learn how to program the microprocessor and the different addressing methods using assembly language and how the various arithmetic, logical, and controlling instructions work, and the types of old processors and how to design them. . Also teaching the student what is the concept of a program and methods of scheduling it through the system on the microprocessor and how to implement it and the types of programs, whether arithmetic or logical, related to the use and learning about the concept of memories in the calculator and the way to connect and program them, as well as knowing all their types, as well as enabling the student to learn how to connect input and output devices to the microprocessor and how to program it.</p>

9. Teaching and Learning Strategies

Strategy	Lectures Exercises Homework Reports
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to the microprocessors. A Introducing the student to some basic terms that will be used frequently in the following topics.	Introduction to the microprocessor and computer.	Attend	quiz+ mid exams
2	2	Providing the student with sufficient knowledge about the processor architecture and explaining the basic units within the processor and the available registers for the purpose of storing data temporarily. A Explaining the functions that are performed within these units	The 8086 Hardware Specifications: Internal Architecture. Pin-outs and the pin functions	Attend	quiz+ + mid exams

3	2	Introducing the Available ways to address memory and enhancing ability to distinguish between the different addressing Methods available access a memory.	Addressing Modes: Register, immediate, direct, register indirect, based-plus-index, register relative, and base relative-plus-index addressing	Attend	Quiz+ + n exams
4	2				
5	2	Providing the student with knowledge about the different groups of instructions and the function of each group. There are instructions used the purpose of transferring data, performing mathematical or logical operations, for the purpose control	Instruction Set and Programming: Data Movement Instructions Arithmetic Instructions Logical Instruction programming microprocessor, usi debugger, usi assembler	Attend	Quiz+ + n exams
6	2				
7	2				
8	2				
9	2	Memory Interface: mem device, RO EEPROM, SRAM, DRA address decodi memory syst design, mem interface	Identify the types of memory and the advantages and disadvantages of each type. Also Learn the proces of address encoding and memory system design	Attend	Quiz+ + n exams
10	2				
11	2	Input/Output: Bus and buffering and latching.	Identify all inputs and outputs Related to	Attend	Quiz+ + n exams
12	2				
13	2				

		Demultiplexing the busses. The buffered System I/O Instructions. Isolated and Memory-Mapped I/O. handshaking, I/O Port Address Decoding, 8 and 16-Bit I/O Port. PPI (8255) Key Mat Interface The 82 Programmable Keyboard/ Disp Interface, 82 Programmable Inter Timer. ADC and DAC	8086 microprocessor and their instructions, in addition to their types.		
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14	2	Interrupts: Basic Interrupt Processing, Hardware Interrupts, Expanding Interrupt Structure, 8259 PIC, Interrupt examples	Introducing the student to the concept of interruptus , how to treat it, and giving different examples about interruptus.	Attend	Quiz+ + n exams
15	2				

11. Course Evaluation

40 % distributed between daily exams, a semester exam, and various assignments and homework's.

60% end-of-semester exam

So the total of the final mark is 100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

1- Walter A. Triebe, “ The 8086 Microprocessor: Architecture, Software, and Interfacing Techniques”, Prentic-Hall Inc., 1998

2. Triebel, Walter A., and Avtar Singh. The 8088 and 8086 Microprocesso Programming, Interfacing,

	Software, Hardware, and Applications: Including the 80286, 80386, 80486, and Pentium Processor Families. 2003.
Main references (sources)	1. Barry B. Brey, "The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, and Pentium Pro processor Architecture, Programming, and Interfacing", 6th Edition, Prentic-Hall Inc., 2003.
Recommended books and references (scientific journals, reports...)	Any public journals or reports that de with 8086 microprocessor.
Electronic References, Websites	Other lectures notes on the Internet network

Course Description Form

13.Course Name:	
Electromagnetic Fields II	
14.Course Code:	
CE2205	
15.Semester / Year:	
2 / 2023-2024	
16.Description Preparation Date:	
19/3/2023	
17.Available Attendance Forms:	
18.Number of Credit Hours (Total) / Number of Units (Total)	
45 hours / 30 units	
19.Course administrator's name (mention all, if more than one name)	
Name: Haydar Malik Abdulhadi	
Email: haydar.m.abdulhadi@uotechnology.edu.iq	
20.Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Study the fundamental principles of electromagnetic fields. • Gives the students the knowledge in basic theory and analysis of Magnetic fields • Drive Maxwell equations for M field that is need in several objects courses in third and fourth years such as propagation, antenna and microwave engineering.
21.Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> • Lectures • Tutorials

- Electric education

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Capacitance Defined, several capacitance examples	Capacitance	Lectures, Tutorials	Quiz + Exam + HW
2	3	Poisson's and Laplace's Equations, Examples of the solution of Laplace's equation (1-D)	Capacitance	Lectures, Tutorials	Quiz + Exam + HW
3	3	Biot-Savart law, Ampere's circuital law	The steady Magnetic Field	Lectures, Tutorials	Quiz + Exam + HW
4	3	Curl, Stokes theorem	The steady Magnetic Field	Lectures, Tutorials	Quiz + Exam + HW
5	3	Magnetic flux and magnetic flux density, the scalar and vector magnetic potentials	The steady Magnetic Field	Lectures, Tutorials	Quiz + Exam + HW
6	3	Derivation of steady-magnetic-field laws	The steady Magnetic Field	Lectures, Tutorials	Quiz + Exam + HW
7	3	Force on a moving charge, force on differential current element	Magnetic Forces	Lectures, Tutorials	Quiz + Exam + HW
8	3	Force between differential current elements	Magnetic Forces	Lectures, Tutorials	Quiz + Exam + HW
9	3	Force and torque on a closed circuit	Magnetic Forces	Lectures, Tutorials	Quiz + Exam + HW
10	3	Magnetization and permeability, magnetic boundary conditions	Magnetic Materials and Inductance	Lectures, Tutorials	Quiz + Exam + HW
11	3	The magnetic circuit, potential energy	Magnetic Materials and Inductance	Lectures, Tutorials	Quiz + Exam + HW
12	3	Forces on magnetic materials, inductance and mutual inductance	Magnetic Materials and Inductance	Lectures, Tutorials	Quiz + Exam + HW
13	3	Faraday's law, Displacement current	Time-Varying Fields and Maxwell's Equations	Lectures, Tutorials	Quiz + Exam + HW
14	3	Maxwell's Equations in point forms, Maxwell's Equations in integral form	Time-Varying Fields and Maxwell's Equations	Lectures, Tutorials	Quiz + Exam + HW
15	3	Retard Potentials	Time-Varying Fields and Maxwell's Equations	Lectures, Tutorials	Quiz + Exam + HW

23. Course Evaluation

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- William H. Hayt and Joun A. Buck, "Engineering Electromagnetic".
Main references (sources)	2- Sadiku, "Elements of Electromagnetic". 3- Joseph A. Edminister, "Electromagnetics"
Recommended books and references (scientific journals, reports...)	N/A
Electronic References, Websites	N/A

Course Description Form

25.	Course Name:	Arabic language
26.	Course Code:	CE2207
27.	Semester / Year:	2024
28.	Description Preparation Date:	1st / 2023-2024
29.	Available Attendance Forms:	My presence in the classrooms of the Telecommunications Engineering department.
30.	Number of Credit Hours (Total) / Number of Units (Total)	1.h
31.	Course administrator's name (mention all, if more than one name)	Name: nihaya mohammed abdali Email: nihaya.M.AbdAli@uotechnology.edu.iq
32.	Course Objectives	<ul style="list-style-type: none"> -Identify the characteristics and advantages of the Arabic language -Identifying linguistic causes, linguistic correction, and grammatical errors. -Identify the signs and marks that are important in writing documents and research, which are important for graduates in assuming any administrative job opportunity. -knowing the nature of administrative tasks that require familiarity with the rules of the Arabic language and the signs, symbols and locations used correctly - Identify the motives behind the emergence of grammar

-Getting to know some poets and the history of their upbringing, some of them before Islam and after Islam, and clarifying how they sang about the landmarks of their country and the extent of their connection to their civilization and the land in which they lived, which increased their longing for it until death.

33. Teaching and Learning Strategies

Strategy	<p>-1-Encouraging students to ask intellectual questions and discuss everything new to serve scientific aspects.</p> <p>-2-Discussing topics related to Arabic grammar and following brainstorming to present opinions by encouraging students to discuss a previously agreed-upon topic.</p> <p>-3- Teaching students how to think, analyze and deduce in a correct scientific manner</p>
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34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	1	Providing students with modern knowledge in the field of language Introducing them to the characteristics of the Arabic language and its importance in their practical and academic lives	Characteristics and advantages of the Arabic language	presence	Questions and discussion
second	1	Adherence to the rules of writing texts, especially writing the hamza and its types	Rules for writing the hamza at the beginning of a word (hamzat wasl and hamzat qat') Positions of hamzat al-wasl and hamzat qat'	presence	Questions and discussion Homework

third	\	Identify the types of original and secondary grammatical signs and emphasize them when writing texts in official documents in institutions	Types of original parsing signs Sub parsing marks It is prohibited to exchange Prohibited from spending for one reason What is prohibited from morphing are the types of original grammatical signs Sub parsing marks It is prohibited to exchange Prohibited from spending for one reason It is forbidden to exchange for two reasons	presence	-Question and training on some models to determine their correctness and what is the expected error -
fourth	\	Number rules in the Arabic language	Definition of number Types of number (singular, compound, contract words, and countable conjunctions) are examples of parsing numbers and the countable Number metonymies: Metonymy are words that are not numbers but indicate number	presence	-Question and discussion - -Discussion, exercises and training on writing texts. -

fifth	\	Identify the origin of the Arabic language before the Naskh script	Parsing points and dictionary points Ignored letters Lexical letters	presence	-Questions and discussion
sixth	\	The Arabic language is the mother tongue and the language of our fathers, which they are proud of because they write and speak a correct language devoid of melody	Common linguistic errors and linguistic correction Grammatical errors The reasons that led to the use of some words with meanings different from what they were intended for Correct writing conditions	presence	-Questions and discussion -Discuss some texts and learn about the mistakes that must be avoided in our practical work in institutions
seventh	\	Recognizing that every science is based on scattered theories, then the theories are gathered and an accurate and correct scientific formulation is formulated. Who are the first to do so?	Motivations for the emergence of grammar in Basra The first founders of the science of grammar	presence	-Questions and discussion
eighth	\	Literature/poetry is the summary of human experience and is the source of knowledge. Poets made poetry a vessel for their experiences and it simulates the events in each world squeeze out.	Hassan bin Thabit (Poet of the Messenger) is one of the veteran poets	presence	- Questions, discussion and getting to know poets that students are

					interested in, to know the quality of poetry among the students, and to encourage them and try to support them to participate in festival they have the necessary talent.
ninth	\	=====	Muhammad Mahdi Al-Jawahiri / Born in Najaf - Iraq	presence	-Questions and discussion
tenth	\	=====	- Badr Shaker Al-Sayyab / born in Basra - his life - features of works - his most prominent poems	presence	-Daily examination questions and discussion Write any poet whose poems you are interested
eleven	\	-Discussing reports that deal with clarification and focusing on the most important things that are useful in the practical field of institutions in terms of using terms and phrases that are important in writing the document, whether in the field of precise or general specialization. -	-Reports on Arabic grammar	-presence	-Questions and discussion

twelfth		A review of the aspects of the rules that were addressed	Arabic grammar	presence	-Question and discussi
thirteen		Literature is poets who sing about the nation	Reports related to literature/poets	presence	-Question and discussi
Fourteenth		review	review	presence	-oral exa
Fifteenth		Poetry talent		presence	-throw - Poetry students

35. Course Evaluation

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

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Al-Saeed, Abdul Latif: Simplified Arabic Grammar,(n.p), (n.p)
Main references (sources)	Al-Saeed, Abdul Latif: Simplified Arabic Grammar,(n.p), (n.p) Shawqi Dhaif. Grammatical Schools, Dar Al-Maaref, 7th edition , (n.d,) http://www.archive.org/download/waq8696/8696.pdf Fakhri Muhammad Saleh, Ara language performance, pronunciati dictation and writing, Mansoura: Dar Wafa, 200 .p
Recommended books and references (scientific journals, reports...)	All modern books, references, research and magazines on the Internet are related to preparing the Arabic language And Arab poets

Electronic References, Websites	View articles, research, and Arab studies with specific specialization the Arabic language on websites
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Course Description Form

1. Course Name:					
Analog Communication Systems I					
2. Course Code:					
CEM 2206					
3. Semester / Year:					
1 / 2023-2024					
4. Description Preparation Date:					
19/3/2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
40 hours / 30 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Atheer Alaa Sabri Email: atheer.a.sabri@uotechnology.edu.iq					
8. Course Objectives					
Course Objectives	<ul style="list-style-type: none"> To provide the student with knowledge related to various components of communication systems. To provide the student with knowledge related to the types of signals and systems in communication systems. To have knowledge regarding Amplitude Modulation systems Quadrature Amplitude Modulation and Frequency Division Multiplexing. 				
9. Teaching and Learning Strategies					
Strategy	<ol style="list-style-type: none"> 1. Lectures 2. Tutorials 3. Homeworks 4. Reports 				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Introduction to Communication Systems	Elements of communication system and its fundamental limitations. Need of modulation, Analog or Digital communications, Why analog design remains important.	Lectures, Tutorials	Quiz + Exam + HW
2	3	Identify the types of Signals in time domain	Classification and representation of continuous time and discrete time signals, Signal operations,	Lectures, Tutorials	Quiz + Exam + HW

			Continuous time and discrete time systems- classification & properties		
3	3	Dealing with systems	Differential equation representation of continuous time systems, Frequency domain representation of continuous time signals.	Lectures, Tutorials	Quiz + Exam + HW
4	3	Converting Signals to Frequency Domain	Fourier series & Fourier transform, properties.	Lectures, Tutorials	Quiz + Exam + HW
5	3	Understanding the basics of Modulation	Frequency translation, Method of frequency translation	Lectures, Tutorials	Quiz + Exam + HW
6	3	Understanding DSB-SC Modulation	DSB-SC Signal and its Spectrum, Balanced modulator, Synchronous detectors	Lectures, Tutorials	Quiz + Exam + HW
7	3	Understanding DSB-LC Modulation	Amplitude modulation, Modulation index. Spectrum of AM signal. Modulators and Demodulators (Diode detector)	Lectures, Tutorials	Quiz + Exam + HW
8	3	Understanding SSB and VSB Modulations	SSB Signal, SSB generation methods, Vestigial Sideband (VSB) Modulation	Lectures, Tutorials	Quiz + Exam + HW
9	3	Identify QAM and power calculation in Amplitude Modulation	Quadrature Amplitude Modulation. Power calculations in AM systems	Lectures, Tutorials	Quiz + Exam + HW
10	3	Application of AM Systems	Concept synthesis for AM. Application of AM Systems	Lectures, Tutorials	Quiz + Exam + HW
11	3	Understanding how to share channel in frequency domain	FDM system (transmitter & receiver)	Lectures, Tutorials	Quiz + Exam + HW
12	3	Understanding how to share channel in frequency domain	Practical implementation of FDM system	Lectures, Tutorials	Quiz + Exam + HW
13	3	Types of Noise in Communication Systems	Sources of Noise, Resistor Noise, Shot Noise, Calculation of Noise in a Linear System, Noise in AM Systems	Lectures, Tutorials	Quiz + Exam + HW
14	3	Practical AM Communication Systems	AM transmitter, Radio telegraph and telephone transmitters, SSB transmitters.	Lectures, Tutorials	Quiz + Exam + HW
15	3	Practical AM Communication Systems	AM receivers: RF section, Frequency changing and tracking	Lectures, Tutorials	Quiz + Exam + HW

11.Course Evaluation

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

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Communication Systems, S. Haykin, John Willy & Sons.
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Main references (sources)	Modem Analog & Digital Communication Systems, B.P. Lathi, Oxford Univ.
Recommended books and references (scientific journals, reports...)	Analog Communication Systems, Pchakrabarti Dhanpat Rai
Electronic References, Websites	N/A

Course Description Form

37.	Course Name: Mathematics IV
38.	Course Code: CE2202
39.	Semester / Year: 1 st Semester
40.	Description Preparation Date: 18.3.2024
41.	Available Attendance Forms: classroom
42.	Number of Credit Hours (Total) / Number of Units (Total)
Units (4)	
43.	Course administrator's name (mention all, if more than one name)
Name: Dr. Haider Abdulelah Abdulkarim Email: haider.a.abdulkarim@uotechnology.edu.iq	
44.	Course Objectives
Course Objectives	<ol style="list-style-type: none"> 1. This module aims to ensure that students would have the mathematical skills and knowledge to cope with the mathematical content of their degree course. 2. Through its first part, the students learn the principles of Laplace Transform of real-valued functions. 3. They also learn the concept and properties of Z-Transform, as well as the transformation kernel calculation. 4. In addition, the students will study the sequence and series theory. 5. Finally, the students will be able to analyze linear vectors and planes

45. Teaching and Learning Strategies

Strategy	This module adopts the main strategy of encouraging students' participation in the exercises while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, within-class problem solving and quizzes.
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46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1~5	[18hrs]	Unit step function, Gamma function, Definition of Laplace Transform, Properties, Inverse of Laplace Transform, properties, partial fractions, convolution theorem, integral equation, solution of differential equations using Laplace transform. Applications. Function of two or more variables Partial derivatives Directional derivative. Gradient, divergence and curl. Tangent plane and normal line. Maxima, minima & saddle point.	Laplace Transform	Lectures (attendance)	Mid Exam
6~9	[16hrs]	Definition of the Z-Transform (ZT), ZT of some elementary functions, properties of transform, Region of convergence, Z-Transform pairs, Mapping of S-plane onto Z-plane. The inverse of Z-Transform; partial fraction inversion, power series inversion, inverse integral, and discrete convolution methods. Application of ZT to difference equation, analysis and discrete-time systems.	Z Transform	Lectures (attendance)	Mid Exam
10~14	[18hrs]	Sequences: convergence test of monotone.	Sequence and Series	Lectures (attendance)	Mid Exam

14~15	[8hrs]	Series: geometric series nth partial sum, test of convergence, alternating series. Power and Taylor's series. Equations of lines and planes. Product of three or more vectors. Vector function & motion velocity and acceleration Tangential vectors. Curvature and normal vector.	Vector Analysis	Lectures (attendance)	Mid Exam
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47. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation home works, monthly, and mid-term written exams .

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Advanced Engineering Mathematics 12 th edition
Main references (sources)	Thomas Calculus 12 th edition
Recommended books and references (scientific journals, reports...)	Calculus Anton, Bivens and Davis
Electronic References, Websites	Calculus I (lamar.edu)

Course Description Form

1. Course Name:
Physics of Optical Elements
2. Course Code:
CE2201
3. Semester / Year:
2 / 2023-2024
4. Description Preparation Date:
19/3/2024
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours / 30 units
7. Course administrator's name (mention all, if more than one name)
Name: Zainab Naser Jameel

Email: zainab.n.jameel@uotechnology.edu.iq

8. Course Objectives

Course Objectives	<ul style="list-style-type: none"> • Study the basic principles of the optical fiber communications systems. • Study the basic principles of the optical sources in optical communications systems. • Providing the student with knowledge in the theoretical and how to work for the optical communication system.
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9. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1. Lectures 2. Exercises 3. Homework 4. Reports
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Overview of optical fiber	Introduction to The Nature of Light , Light as an Electromagnetic Wave	Lectures, Tutorials	Quiz + Exam + HW
2	2	Types of Optical Fibers	Optical Fibers Communication systems	Lectures, Tutorials	Quiz + Exam + HW
3	2	Fiber Manufacture	Optical Fibers	Lectures, Tutorials	Quiz + Exam + HW
4	2	Light Production , Spontaneous and stimulated Emission	Optical Light Sources	Lectures, Tutorials	Quiz + Exam + HW
5	2	Light sources, Light Emitting Diodes (LEDs) , Lasers	Light sources in optical fiber communication system	Lectures, Tutorials	Quiz + Exam + HW
6	2	Principle of the LASER , Semiconductor Laser Diodes	Types of lasers	Lectures, Tutorials	Quiz + Exam + HW
7	2	Overview of Photoconductors	Optical Detectors	Lectures, Tutorials	Quiz + Exam + HW
8	2	P-N Diodes	Types of diodes	Lectures, Tutorials	Quiz + Exam + HW
9	2	P-I-N Diodes	Types of Photodetectors	Lectures, Tutorials	Quiz + Exam + HW
10	2	Avalanche Photodiodes (APDs)	Types of Photodetectors	Lectures, Tutorials	Quiz + Exam + HW
11	2	Overview of Optical Devices	Optical Devices	Lectures, Tutorials	Quiz + Exam + HW
12	2	Optical Amplifiers	Types of Optical Devices	Lectures, Tutorials	Quiz + Exam + HW
13	2	Erbium Doped Fiber Amplifiers (EDFAs)	Optical Amplifiers	Lectures, Tutorials	Quiz + Exam + HW
14	2	Semiconductor Optical/Laser Amplifiers , Raman Effect Amplifiers	Optical Amplifiers	Lectures, Tutorials	Quiz + Exam + HW
15	2	Other components Lenses and Prisms , Diffraction Gratings, splitters	Components related with amplifiers	Lectures, Tutorials	Quiz + Exam + HW

11. Course Evaluation

	Term Exam	Quizzes + HW	Final Exam	
	As(30%)	As(10%)	As(60%)	
12.Learning and Teaching Resources				
Required textbooks (curricular books, if any)	1- J .M . Senior , Optical Fiber Communications , 2009			
Main references (sources)	G. Keiser , Optical Fiber Communications , 2000			
Recommended books and references (scientific journals, reports...)	G . P . Agrawal , Fiber-Optic Communication Systems, 2010			
Electronic References, Websites	N/A			