المقررات الدراسية / كلية الهندسة / جامعة الموصل

المستوى الرابع للعام الدراسي 2020-2021

قسم الهندسة / الحاسوب

المستوى الدراسي الرابع (الفصل الثاني)									
اسم المتطلب	نوع المتطلب (اجباري – اختياري)	اسم المقـــــرر		عدد الساعات النظرية	عدد الساعات العملية	عدد الوحدات	الممهد ان وجد	رمز المقرر	الملاحظات
		باللغة العربية	باللغة الإنكليزية						
متطلبات الجامعة	اجباري	اللغة الانكليزية – ما بعد المتوسط	English language – Upper Intermediate	2	-	2			
	اجباري	اخلاقيات المهنة	Professional Ethics	2	-	2	-	UOMC104	
متطلبات القسم	اجباري	مشروع تخرج II	Graduation Project II	2	-	2	مشروع تخرج I	GRPR450	
	اجباري	سيطرة رقمية	Digital Control	3	2	4	أنظمة السيطرة	DICO452	
	اجباري	هندسة البرمجيات	Software Engineering	2	-	2	-	SOEN451	
	اختياري	أمنية الشبكات	Network Security	2	-	2	-	NESE453	يختار الطالب مقرر واحد فقط ، عدد الوحدات المطلوبة =2 وحدة
		معالجات الأغراض الخاصة	Special Purpose Processors					SPPR456	
	اختياري	تطبيق الشبكة وإدارتها	Network Application & Management	2	-	2	-	NAMA455	يختار الطالب مقرر واحد فقط ، عدد الوحدات المطلوبة =2 وحدة
		الأنظمة الموزعة	Distributed System					DISY457	
	اختياري	الشبكات الصناعية	Industrial Network	2	-	2	-	INNE454	يختار الطالب مقرر واحد فقط ، عدد الوحدات المطلوبة =2 وحدة
		الهوائيات والانتشار	Antenna and Propagation					ANPR458	
		سيطرة ذكية	Intelligent Control					INCO459	
	مجموع ساعات ووحدات الفصل الدراسي الثاني			**17**	**2**	**18**			

University of Mosul
College of Engineering
Computer Engineering Dept.

English Language – Upper-Intermediate Level
( )

Lab	Tutorial	Theory
0	0	2

Course Objectives:

This is an under graduate level course on English Language at an upper-intermediate level. The course involves practicing the four language skills (reading, writing, listening, and speaking) as well as oral and written exams. We will read and discuss topics on various aspects of English Language such as: casual conversations, present simple, perfect, and continuous, narrative tense, being polite, future forms, expressions of quantity, exaggerations and understatement, relative clauses, make your point.

Course Details:

Article	Week
Unit 1: Home and away!	1
Unit 2: Been there, got the T-shirt	1
Unit 3: News and views	1
Unit 4: The naked truth	2
Unit 5: Looking ahead	2
Unit 6: Hitting the big time	2
Unit 7: Getting along	2
Unit 8: How remarkable!	2
Unit 9: The way we were	2

References

Oxford University Press. (2014). *New headway: upper-intermediate fourth edition*.

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Network Security (NESE453)

Lab Tutorial Theory

2

Course Objectives:	
This is an under graduate level course on network security' The course involves both a reading /lecture/discussion and a term project' We will read and discuss topics on various aspects of network security: Ciphering &Encryption, block and stream ciphering, public key' cryptanalysis' key management and distribution and Applied security	
Course Details:	
Article	**Week**
1. Requirements of Network Security	1
2, Introduction to Modern Symmetric-Key Ciphers: Block and stream ciphering	1
3. Data Encryption Standard (DES)	1
4. Advanced Encryption Standard (AES)	1
5. Modern Symmetric-Key Ciphers	1
6. Asymmetric-key cryptography	2
7. Message Integrity and Message Authentication'	1
8. Cryptographic Hash Functions	1
9. Digital Signature	1
10. Entity Authentication	1
11. Security in the internet: IPSec, SSL/TLS,PGP,VPN, and Firewalls	1
12. Security at the Transport Layer: SSL and TLS	1
13. security at the ,application Layer: PGP and S/MIME	1
14. Wireless LAN Security	1
Text Books	
Tanenbaum A.S. , "Computer Network",5th, Edition, Prentice-Hall Publishing,2014 Stallings W. , "Data & Computer Communications", 8th Edition , Prentice-Hall Publishing,2012 Forouzan B.,"Data, Communications and Networking", '5th Edition McGraw-Hill Publishing,2013	

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Special Purpose Microprocessors (CONE403)

Lab	Tutorial	Theory
0	0	2

Course Objectives:

This is an under graduate level course on special purpose microprocessors. The course involves both a reading/lecture/discussion. We will read and discuss topics on various aspects of special purpose microprocessors: DSP processors, Network processors & Graphics processing unit,

Course Details:

Article	Week
1. Introduction to special purpose microprocessors	1
2. Instruction set summary	2
3. System architecture	1
4. TMS320C5402 programming	2
5. Network processors	2
6. Network processor architectures	2
7. Intel IXA network processors	2
8. Security Co-processors	1
9. Graphics processors	2

1. TMS320C54x DSP Reference set, Texas instruments, 2001
2. An Introduction to Digital Signal Processors, Prentice-Hall Publishing, 2002.
3. Network Processors., McGraw-Hill Publishing, 2004.
4. Nvidia GeForce GPU data sheet

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Network Applications and Management
(NAMA455)

Lab	Tutorial	Theory
		2

Course Objectives:

The course will provide information to students on how to install, maintain, and manage Local Area Networks and internetworks. Students will have an understanding of network management architectures and protocols. They will be comfortable using a variety of network management tools and they will be familiar with a variety of computer network security issues.

Course Details:

Article	Week
1. Data Communications and Network Management	2
2. Computer Network Technologies	2
3. Basic Foundations: Standards, Models, Language	2
4. SNMP: Organization and Information Models	2
5. SNMP Management: RMON	2
6. Network Management Tools and Systems	2
7. Network Management Applications	2
8. Web-Based Management	1

5. Network Management: Principles and Practice; by Mani Subramanian; Addison Wesley; 2000; ISBN 0-201-35742-9
6. Jianguo Ding, Advances in Network Management, Auerbach Publication, 2009, ISBN-10: 1420064525, ISBN-13: 978-1420064520.

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Distributed Systems (DISY457)
Theory
2

Course Objectives:

The course aims at giving the students a broad foundation in the fundamental concepts of distributed systems accompanied by specific projects to develop the basic skills in network programming using RMI or RPC. It introduces the basic architectural models of distributed systems as well as the communication paradigms such as Publish/Subscribe, Message passing, Remote Procedure Call/ Remote Method Invocation, Message Queuing, etc. Besides, it presents various techniques of synchronization. It aims too to introduce distributed algorithms such as election, mutual exclusion, etc.

Course Details:

Article	Week
1. CHARACTERIZATION OF DISTRIBUTED SYSTEMS 1.1 Introduction 1.2 Examples of distributed systems 1.3 Trends in distributed systems 1.4 Focus on resource sharing 1.5 Challenges 1.6 Case study: The World Wide Web	2
2. SYSTEM MODELS 2.1 Introduction , 2.2 Physical models 2.3 Architectural models 2.4 Fundamental models	2
3. INTERPROCESS COMMUNICATION 3.1 Introduction 3.2 The API for the Internet protocols 3.3 External data representation and marshaling 3.4 Multicast communication 169 3.5 Network virtualization: Overlay networks 3.6 Case study: MPI	2
4. REMOTE INVOCATION 4.1 Introduction 4.2 Request-reply protocols 4.3 Remote procedure call 4.4 Remote method invocation 4.5 Case study: Java RMI	2
5. INDIRECT COMMUNICATION 5.1 Introduction 5.2 Group communication 5.3 Publish-subscribe systems 5.4 Message queues 5.5 Shared memory approaches	2
6.TIME AND GLOBAL STATES 6.1 Introduction , 6.2 Clocks, events and process states 6.3 Synchronizing physical clocks 6.4 Logical time and logical clocks 6.5 Global states 6.6 Distributed debugging	2
7. COORDINATION AND AGREEMENT 7.1 Introduction 7.2 Distributed mutual exclusion 7.3 Elections 7.4 Coordination and agreement in group communication 646 7.5 Consensus and related problems	2
Final Exam	1

Text Books

1- Distributed Systems: Concepts and Design by G. Coulouris, J. Dollimore, and T. Kindberg.
2- Distributed Systems: Principles and Paradigms by A. S. Tanenbaum and M. V. Steen.
3- Distributed Computing: Concepts and Applications by M.L Liu.

University of Mosul **Antenna & Propagation**
College of Engineering **(ANPR458)**
Computer Engineering Dept. **Lab Tutorial Theory**
2

Course Objectives:

1. To understand antenna fundamentals and its concepts
2. To study the types of antennas, operation and usage
3. To understand the main parameters that are used in antenna design process
4. To know the main applications of antennas and wave propagation

Course Details:

Article	Week
Basic antenna concepts: Definition and functions of an antenna, comparison between an antenna & transmission line, radio communication link with transmitting antenna and a receiving antenna, radiation patterns of antennas-field and power patterns, all antenna types.	1
Radiation of Electric dipole: Potential functions and the electromagnetic field, Oscillating electric dipole derivations for E and H field components in spherical coordinate systems, Power Radiated by a current element, Application to antennas, Radiation from quarter wave monopole and half wave dipoles, Derivation for radiation resistance, application of reciprocity theorem to antennas, equality of directional patterns and effective lengths of transmitting and receiving antennas, directional properties of dipole antennas, antenna feeding methods.	2
Antenna parameters and definitions: beam area, beam width- Half-Power Beam width (HPBW)and First Null Beam width(FNBW) ,Polarisation, Radiation Intensity ,Beam Efficiency, Directivity and directive gain, radiation resistance, radiation efficiency, resolution, Antenna aperture-physical and effective apertures, effective height, transmission formula, antenna field zones, Transmission loss as a function of frequency. Antenna temperature and signal to noise ratio.	2
Loop Antenna: Small loop short magnetic dipole, comparison of far field of small loop and short dipole loop antennas, field pattern of circular loop antenna & radiation resistance of loop antenna, directivity of circular loop antennas with uniform current.	1
Helical antenna: Helical geometry, transmission radiation modes, practical design considerations, wide band characteristics of helical antenna.	1
Reflector antennas: Parabolic reflector, paraboloidal reflector, aperture Pattern of large circular apertures with uniform illumination, off axis operation of paraboloidal reflectors, Cassegrain feed system.	2
Slot patch & Horn antennas: Slot antenna and its pattern.	1
Microstrip (patch) antennas : Rectangular and circular types-function, features analysis ,design considerations and applications	2
Lens antennas: Non-metallic Dielectric lens and artificial dielectric lens antennas, reflector lens antennas.	1
Broadband & Freq. Independent antennas: Broadband antenna, Frequency independent antenna, log periodic antennas.	1
Antennas for special applications: Antennas design consideration for satellite communication, GPR, Embedded antennas, UWB, Plasma antenna.	1

Text Books

1. Constantine A. Balanis, “Antenna Theory: Analysis and design”, Wiley, 2016.
2. U. A. Bakshi, “Antenna & Wave Propagation”, Technical Publications, 2011.
3. John D. Kraus and Ronald J. Marhefka, “Antennas for all applications”, McGraw-Hill Science, 2001.