Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: Computer Science + Information Technology
Stage: 4th Year
Instructor name: Dr. Belal Al-Khateeb
Academic status: Asst. Prof.
Qualification: PhD
Place of work: University of Anbar

Course Weekly Outline

Course Name: Artificial Intelligence I

Course Instructor	Dr. Belal Al-Khateeb				
E-mail	belal@computer-college.org				
Title	Asst. Prof.				
Course Coordinator	Dr. Belal Al-Khateeb				
Course Objective	1- Understanding of AI definitions, characteristics and types. 2- Distinguishing between AI search techniques. 3- Designing smart systems for solving daily life problems.				
Course Description	This course aims to make students know about AI and how to solve problems by using blind search techniques and resolution methods.				
Textbook	Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig, Pearson Education 2010.				
References	Artificial Intelligence: Structures and Strategies for Complex Problem Solving, George F. Luger, Addison-Wesley, 2008				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	25%	15%	10%	5%	50%
General Notes					

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
University: Anbar
College: CS & IT
Department: Computer Science + Information Technology
Stage: 4th Year
Instructor name: Dr. Belal Al-Khateeb
Academic status: Asst. Prof.
Qualification: PhD
Place of work: University of Anbar

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		General Introduction.		
2		The History of AI.		
3		Systematic Search: basic graph concepts; state space representation of problems.		
4		Depth-First Search.		
5		Breadth-First search.		
6		Hybrid Search.		
7		Predicate logic: basic concepts and definitions		
8		Predicate logic: basic concepts and definitions		
9		Mid Term Exam		
10		Propositional logic and resolution in proposional logic;		
11		Horn clauses; unification		
12		Clause normal form.		
13		Modus-ponens and resolution inference rules in predicate logic.		
14		Control strategies for resolution inference (problem solving).		
15		Control strategies for resolution inference (problem solving).		

Instructor Signature:  **Dean Signature:**

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: CS&IT
Stage: Fourth
Instructor name: Dr.Rabah Nory
Academic status: Assist. Prof
Qualification:
Place of work:

Course Name : Data Security

Course Instructor	Dr. Rabah Nory Farhan				
E-mail	Rabahalobaidy@yahoo.com				
Title	Data Security				
Course Coordinator					
Course Objective	The objective of the course is to provide an introduction to the basic concepts of computer security for graduate level students. The course contents include: security concepts, such as confidentiality, integrity, authenticity, availability etc. Symmetric and asymmetric cryptography and their uses; key distribution and digital signatures; discretionary and mandatory access control policies for confidentiality and integrity. Communication protocols for authentication, confidentiality and message integrity. Network security; system security, intrusion detection and malicious code. Security models and security evaluation. Administration of security. Legal aspects of computer security.				
Course Description	Introduction to Data Security, Mathematical Background, Classical Encryption, Data Encryption Standard (DES), Exponential Cipher, Stream Cipher				
Textbook	William Stallings, Cryptography and Network Security, (Principles and Practice), 2011				
References					
Course Assessments	TermTests	Laboratory	Quizzes	Project	Final Exam
	5%	30%	5%	10%	60%
General Notes					

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: CS&IT
Stage: Fourth
Instructor name: Dr.Rabah Nory
Academic status: Assist. Prof
Qualification:
Place of work:

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		Iintroduction to Data Security, Data Security Principles, Security, Confidentiality, Threats to confidentiality		
2		Security Attack, Security Service, Security Mechanism, Basic Terminology, Basic Cryptographic Algorithms		
3		Cryptographic Random Number Generators, Strength of Cryptographic		
4		Algorithms, Cryptanalysis and Attacks on Cryptosystems		
5		Mathematical Background, Prime Numbers , Greatest Common Divisor(GCD)(LCM) Least Common Multiple, Modular, Euler Function,		
6		Inverse Algorithm		
7		Fast Exponential, Matrix inverse		
8		Exam		
9		Classical Encryption, Codes, Ciphers, Encryption and Cryptography, Transposition Ciphers		
10		Monoalphabetic Ciphers.		
11		Polyalphabetic Ciphers		
12		Playfair Cipher		
13		Hill Cipher		
14		Cipher Analysis		
15		Final Exam		

Instructor Signature: **Dean Signature:**

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: computer science
Stage: 4th year / 1st semester
Instructor name: Muzhir shaban mohammed
Academic status: prof.
Qualification: Ph.D.
Place of work: University of Anbar

Course Weekly Outline

Course Name : Digital Image Processing I

Course Instructor	Muzhir shaban mohammed				
E-mail	muzhir_shaban@yahoo.com				
Title	Prof.				
Course Coordinator	Muzhir shaban mohammed				
Course Objective	Provide students the fundamental aspects of digital image processing by applying mathematics and algorithms using Matlab package.				
Course Description	Fundamental course of digital image processing.				
Textbook	Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Processing Using MATLAB", (2nd edition), Publication Date: 2009 | ISBN-13: 978-0982085400 .				
References	Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing" (3rd edition), Publication Date: August 31, 2007 | ISBN-10: 013168728X | ISBN-13: 978-0131687288. Muzhir Shaban Al-Ani, Digital Image Processing Using Matlab, Publication Date: 2008, Dar Ethraa, UAE, ISBN 001,6425				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	20%		10%	10%	60%
General Notes	The best method to teach this course it must be started in parallel with Matlab applications.				

Republic of Iraq
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& Scientific Research

University: Anbar
College: CS & IT
Department: computer science
Stage: 4th year / 1st semester
Instructor name: Muzhir shaban mohammed
Academic status: prof.
Qualification: Ph.D.
Place of work: University of Anbar

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1	26/10/2015	1D and 2D digital signal processing, fields of processing.		
2	02/11/2015	Elements of digital image processing system and human visual system.		
3	09/11/2015	Electromagnetic spectrum, TV signal transmitting, receiving and TV systems.		
4	16/11/2015	Image representation and digital image files formats.		
5	23/11/2015	Image analysis and histogram representation and histogram equalization.		
6	30/11/2015	Image preprocessing and image enhancement.		
7	07/12/2015	Gray scale image modification.		
8	14/12/2015	Mid Examine.		
9	21/12/2015	Linear and nonlinear mapping.		
10	28/12/2015	Convolution and correlation processes.		
11	04/01/2016	Types of 2D filtering compared with 1D filtering.		
12	11/01/2016	Algebraic operations on images.		
13	18/01/2016	Color Space and image Sampling.		
14	25/01/2016	Application of image processing in real life.		
15	01/02/2016	Application of image processing using Matlab.		

1 / 12 / 2015
Instructor Signature:

Dean Signature:

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: CS and IS Departments
Stage: 4th
Instructor name: Sufyan T. F. Al-Janabi
Academic status: Professor
Qualification: Ph.D.
Place of work: College of CS & IT

Course Weekly Outline

Course Name: Information Security I

Course Instructor	Dr. Sufyan Taih Faraj Al-Janabi				
E-mail	sufyantaih@gmail.com				
Title	Professor				
Course Coordinator	Dr. Sufyan Taih Faraj Al-Janabi				
Course Objective	To make students familiar with the basic concepts of applied cryptography, including classical cryptography and modern secret key cryptography.				
Course Description	This is an introductory undergraduate course on cryptography and data security. We will focus on classical and symmetric key cryptography, including block ciphers and their modes of operation. The course will emphasize rigorous mathematical formulations of security goals and aim to train students in spotting weaknesses in designs.				
Textbook	William Stallings, *Cryptography and Network Security: Principles and Practice*, 6/E, Pearson Education, Inc., 2014.				
References	Charles P. Pfleeger and Shari Lawrence Pfleeger, *Security in Computing*, John Wiley & Sons, Inc., 2007. Mark Stamp, *Information Security Principles and Practice*, John Wiley & Sons, 2006.				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	30%		10%	10%	50%
General Notes					

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: CS and IS Departments
Stage: 4th
Instructor name: Sufyan T. F. Al-Janabi
Academic status: Professor
Qualification: Ph.D.
Place of work: College of CS & IT

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1	3/10/2015	Introduction Historical Notes		
2	10/10/2015	Classical Encryption Techniques Substitution Ciphers		
3	17/10/2015	Transposition Ciphers Encryption Machines		
4	24/10/2015	Block Ciphers		
5	31/10/2015	The Data Encryption Standard		
6	7/11/2015	DES Cryptanalysis		
7	14/11/2015	Groups, Rings, and Fields		
8	21/11/2015	Modular Arithmetic		
9	28/11/2015	Polynomial Arithmetic		
10	5/12/2015	Finite Fields		
11	12/12/2015	Finite Fields of the Form $GF(2^n)$		
12	19/12/2015	AES: The Advanced Encryption Standard		
13	26/12/2015	AES Strength		
14	2/1/2016	Using Block and Stream Ciphers		
15	9/1/2016	Modes of Operation		

Instructor Signature: **Dean Signature:**

Information Security I

4th Year Undergraduate Level Course- The First Semester

College of CS and IT – University of Anbar

Instructor:

Prof. Dr. Sufyan T. Faraj Al-Janabi

Lecture Time:

- Saturday: 11:00 am - 2:00 pm (3 hours)

Course Description:

This is an introductory undergraduate course on cryptography and data security. It delivered for 4th year students in both computer science and information systems departments. Cryptography, broadly speaking, is about communicating in the presence of an adversary, with goals like preservation of privacy and integrity of communicated data. In the first semester, we will focus on classical and symmetric key cryptography, including block ciphers and their modes of operation. The course will emphasize rigorous mathematical formulations of security goals and aim to train students in spotting weaknesses in designs. This is generally regarded by undergraduates as a challenging course. It is mainly theoretical and mathematical in nature, and calls for ability to understand abstract concepts. Students would be asked to do assignments, solve home works, and implement programming projects in order to develop their skills.

Aim:

- To explore the concepts of information security attacks, services, and mechanism.
- To make students familiar with the basic concepts of applied cryptography, including classical cryptography and modern secret key cryptography.
- To explain the mathematical foundation of modern cryptography, especially number theory and finite fields.
- To highlight the practical applications and modes of operation of block ciphers.

Learning Outcomes:

After completing the module, the student should be able to:

- Describe the basic mathematical and technical issues relating to information security.
- Interpret how technology affects the design of symmetrical systems, especially block ciphers.
- Use rigorous mathematical formulations of symmetric cryptography to spot weaknesses in designs.
- Demonstrate skills in using classical ciphers for encryption and decryption.
- Demonstrate skills in using some basic cryptanalysis techniques related to classical cryptography.

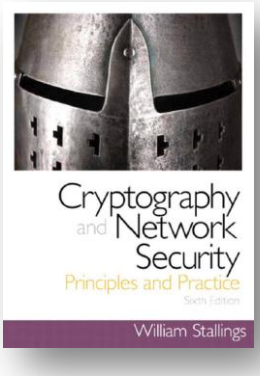
Syllabus:

1.	Introduction Historical Notes	3 hours
2.	Classical Encryption Techniques Substitution Ciphers Transposition Ciphers Encryption Machines	6 hours
3.	Block Ciphers The Data Encryption Standard DES Cryptanalysis	6 hours
4.	Groups, Rings, and Fields	6 hours
5.	Modular Arithmetic	6 hours
6.	Polynomial Arithmetic	6 hours
7.	Finite Fields of the Form $GF(2^n)$	6 hours
8.	AES: The Advanced Encryption Standard AES Strength	3 hours
9.	Using Block and Stream Ciphers Modes of Operation	3 hours

Textbook:

Cryptography and Network Security: Principles and Practice, 6/E
by William Stallings

Publisher: Pearson Education, Inc.
Copyright: 2014



Assignments and home works:

Assignments and home works will be distributed during the course. Unless otherwise is stated, all home works should be performed individually by students. The default time for submitting any home work is one week (they should be submitted before the beginning of the next lecture). All assignments and home works have to be submitted in a printed well-organized form.

Programming Projects:

Programming projects are assumed to be implemented in C/C++ or Java. Both of a printed documents and CD need to be submitted. Usually these can be done based on student groups to be formed during the course.

Acknowledgements:

- These lecture notes are mainly based on those prepared by Prof. Avinash Kak (kak@purdue.edu), Purdue University. Our sincere thanks are devoted to him.

- Thanks are also devoted to William Stallings, Bryan J. Higgs, Simon Singh, and Mostafa H. Dahshan for offering good basic materials over the net.

Information Security II

4th Year Undergraduate Level Course- The Second Semester

College of CS and IT – University of Anbar

Instructor:

Prof. Dr. Sufyan T. Faraj Al-Janabi

Lecture Time: Saturday: 11:00 am - 2:00 pm (3 hours)

Course Description:

This is an introductory undergraduate course on cryptography and data security. It delivered for 4th year students in both computer science and information systems departments. Cryptography, broadly speaking, is about communicating in the presence of an adversary, with goals like preservation of privacy and integrity of communicated data. In the second semester, our focus will mainly be directed to public key cryptography. We will cover topics like hash functions, digital signatures, asymmetric encryption, RSA, public-key infrastructure, key distribution, and various applications. The course aim to train students in spotting weaknesses in designs. Indeed, we will cover topics like viruses, worms, and operating systems security. This is generally regarded by undergraduates as a challenging course. It is mainly theoretical and mathematical in nature, and calls for ability to understand abstract concepts. Students would be asked to do assignments, solve home works, and implement programming projects in order to develop their skills.

Aim:

- To explore the concepts of cryptographic key distribution and the limitation of symmetrical systems in this area.
- To make students familiar with the basic concepts of public key cryptography and hash functions.
- To explain the basic applications of public key systems in key distribution and digital signatures.
- To highlight the technical and social issues related to viruses, worms, and trusted systems.

Learning Outcomes:

After completing the module, the student should be able to:

- Understand and discuss the mathematical background behind the evolution of public key cryptography.
- Interpret how technology and theoretical advances can threat existing public key systems.
- Demonstrate skills in using some public key algorithms for various applications.
- Demonstrate skills in applying cryptographic hash functions for message authentication.
- Describe the social and ethical issues relating to viruses and other malicious codes.

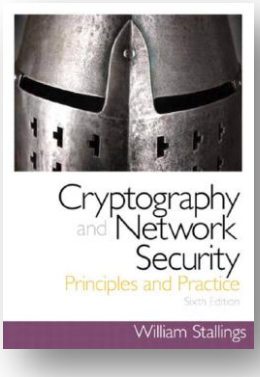
Syllabus:

1.	Issues for Symmetric Key Cryptography: Key Distribution Random Number Generation	6 hours
2.	Prime Numbers Primality Tests	3 hours
3.	Public-Key Cryptography I: General Concepts RSA System RSA Security	6 hours
4.	Public-Key Cryptography II: Exchanging Secret Session Keys Diffie-Hellman System	6 hours
5.	Public-Key Cryptography III: Constructing Digital Signatures El-Gamal System	6 hours
6.	Hashing for Message Authentication Cryptographic Hash Functions MACs Schemes	6 hours
7.	Malware: Viruses Worms	6 hours
8.	Trusted Systems	3 hours
9.	Mounting Targeted Attacks with Trojans and Social Engineering	3 hours

Textbook:

Cryptography and Network Security: Principles and Practice, 6/E
by William Stallings

Publisher: Pearson Education, Inc.
Copyright: 2014



Assignments and home works:

Assignments and home works will be distributed during the course. Unless otherwise is stated, all home works should be performed individually by students. The default time for submitting any home work is one week (they should be submitted before the beginning of the next lecture). All assignments and home works have to be submitted in a printed well-organized form.

Programming Projects:

Programming projects are assumed to be implemented in C/C++ or Java. Both of a printed documents and CD need to be submitted. Usually these can be done based on student groups to be formed during the course.

Acknowledgements:

- These lecture notes are mainly based on those prepared by Prof. Avinash Kak (kak@purdue.edu), Purdue University. Our sincere thanks are devoted to him.

- Thanks are also devoted to William Stallings, Bryan J. Higgs, Simon Singh, and Mostafa H. Dahshan for offering good basic materials over the net.

Republic of Iraq
Ministry of Higher Education
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University: University of Anbar
College: CS & IT
Department: Information Systems
Stage: Forth
Instructor Name: Ali Makki Sagheer
Academic status: Assist. Prof.
Qualification: Computer Science PhD
Place of work: Anbar University

Course Weekly Outline

Course Name: First Course

Course Instructor	**ALI MAKKI SAGHEER**				
E-mail	**ali.m.sagheer@gmail.com**				
Title	**Web Application Development I**				
Course Coordinator					
Course Objective	**Give the student programming language to design and control web application.**				
Course Description	**Give overview about Asp.Net and .Net Framework, apply the First Asp.Net Program, Explain ASP.NET State Management, ASP.NET Web Control Tools, ASP.NET Statements, ASP.NET Data Structure, ASP.NET Collection, ASP.NET Data Access**				
Textbook	**Web Application Development , Free online resources for Microsoft .NET developers, Net-Informations.com, net-informations.com (C) 2013**				
References	**1- Beginning ASP.NET 4.5 in CSharp and VB, Imar Spaanjaars, Joen Wiley & Suns, Inc., 2013.** **2- Web Application Development , Free online resources for Microsoft .NET developers, Net-Informations.com, net-informations.com (C) 2013**				
Course Assessments	**Term Tests**	**Laboratory**	**Quizzes**	**project**	**Final Exam**
	(20%)	**(10 %)**	**(10 %)**	**(10 %)**	**(50%)**
General Notes					

Republic of Iraq
Ministry of Higher Education
& Scientific Research

University: University of Anbar
College: CS & IT
Department: Information Systems
Stage: Forth
Instructor Name: Ali Makki Sagheer
Academic status: Assist. Prof.
Qualification: Computer Science PhD
Place of work: Anbar University

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1	1/11/2015	**What is ASP.NET ?** **Deploy an ASP.NET Web Application**		
2	8/11/2015	**ASP.NET View State**		
3	15/11/2015	**ASP.NET Session State ASP.NET CookiesASP.NET Caching**		
4	22/11/2015	**Web Control Tools** **Label Control** **Button Control** **Textbox Control** **DropDownList Control** **Listbox Control** **Checkbox Control**		
5	29/11/2015	**-RadioButton Control** **-LinkButton Control** **-Image Control** **-Colander Control** **-Treeview Control**		
6	6/12/2015	**Control Statements** **-if else statements** **-for loop** **-foreach loop** **-while loop** **-switch case** **-Exceptions**		
7	13/12/2015	**Mid Exam**		
8	20/12/2015	**Recursion, Definition**		
9	27/12/2015	**Trees , Tree Structure,** **Binary Tree, Other types of trees**		
10	3/1/2016	**Tree Traversing, Trees Representation, General Tree,** **Binary Search Tree**		
11	10/1/2016	**Collections** **-ArrayList** **-HashTable**		
12	17/1/2016	**-Stack** **-Queue** **-Array**		
13	20/1/2016	**ADO.NET Architecture, Advantages of ADO.Net**		
14	27/1/2016	**Disconnected Data Access Architecture** **ASP.NET Connection String** **First ASP.NET Database Program**		
15		**Final Exam**		

Instructor Signature:

Dean Signature:

Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: computer science
Stage: 4th
Instructor name: Ali j. Dawood
Academic status: Assist. Prof.
Qualification: Phd computer science
Place of work: Ar Ramadi

Course Weekly Outline

Course Name : Operating System 1

Course Instructor	Assist. Prof. Dr. Ali Jbaeer Dawood				
E-mail	dralijd@yahoo.com				
Title	Assist. Prof.				
Course Coordinator					
Course Objective	To present operating systems objectives, concepts, structure and mechanisms. To develop students practical knowledge of operating systems by means of advanced use and system programming.				
Course Description	(1) Introduction To Computer Systems; (2) Introduction To Operating Systems; (3) Process Managment: Introduction To Processes, Process Scheduling, Interprocess Communication, Classical IPC Problems, (4) dead lock				
Textbook	-Petrson, Operating System Concepts, Prentice Hall				
References	-Tanenbaum, Andrew S. Modern Operating Systems. Prentice Hall. -Hantelmann, Fred. Linux Start-up Guide. Springer. -Kernighan, Brian W. e Ritchie, Dennis M. The C Programming Language (ANSI C). Prentice-Hall. -Robbins, Kay A. Practical UNIX Programming. A Guide to Concurrency, Communication, and Multithreading. Prentice-Hall.				
Course Assessments	TermTests	Laboratory	Quizzes	Project	Final Exam
	C1=15% C2=15%	10%	10%		50%
General Notes					

Republic of Iraq
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University: Anbar
College: CS & IT
Department:
Stage:
Instructor name:
Academic status:
Qualification:
Place of work:

Course Weekly Outline

Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		Introduction to Operating System (OS)		
2		Categories & performance development		
3		Computer system operation		
4		OS services, OS & user view		
5		Information management (files)		
6		Access methods, directories		
7		Free Space List (FSL)		
8		Allocation Methods		
9		Process Management		
10		Process Scheduling, sch. levels		
11		Context Switch, Operations on process		
12		Threads, Interrupts		
13		CPU Scheduling, Sch. algorithms		
14		Deadlock (def. & conditions)		
15		Methods for handling Deadlock		
16		RAG, Bankker's and safety algorithms		

Instructor Signature:

Dean Signature: