

Mathematical Computation

( الرياضيات الحاسوبية )

Course Weekly Outline

الرياضيات الحاسوبية (١)

Week	Topics Covered	Lab. Experiment Assignments	Notes
1	Introduction to functions & equations		
2	Introduction to functions & equations		
3	Limits and Continuity		
4	Limits and Continuity		
5	Theory of derivative , chain rule		
6	Theory of derivative , chain rule		
7	Theory of derivative , chain rule		
8	Derivatives		
9	Derivatives		
10	Derivatives		
11	Implicit Differentiation		
12	Inverse of trigonometric function		
13	Partial differentiation		
14	Extreme of a function with two variable.		
15	Extreme of a function with two variable.		

الرياضيات الحاسوبية (٢)

.١	Integration and their Applications		
.٢	Integration of trigonometric		
.٣	Integration of exponential function		
.٤	Integration of hyperbolic function		
.٥	Integration of inverse function of trigonometric		
.٦	Integration of inverse function of hyperbolic function		
.٧	Method of integration		
.٨	Double & Triple integration		
.٩	Differential equations		
.١٠	Vectors & Matrices		
.١١	Polar & spherical coordinates		
.١٢	Sequences & series		
.١٣	Improper integral		
.١٤	Complex numbers		
.١٥	complex functions with simple transformations		
.١٦	06/06 Laplace transforms		

**Computer Statistics**  
إحصاء حاسوبي  
**Course Weekly outline**  
إحصاء حاسوبي

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week		Topics Covered	Lab. Experiment Assignments	Notes
1.		الإحصاء الوصفي		
2.		رموز ومصطلحات إحصائية		
3.		مقاييس النزعة المركزية: الوسط الحسابي		
4.		مقاييس النزعة المركزية: الوسط الحسابي		
5.		مقاييس النزعة المركزية: الوسط الحسابي		
6.		الوسيط والمنوال		
7.		الوسيط والمنوال		
8.		مقاييس التشتت: المدى والانحراف المتوسط		
9.		مقاييس التشتت: المدى والانحراف المتوسط		
10.		التباين والانحراف المعياري		
11.		الارتباط الخطي البسيط		
12.		الارتباط الخطي البسيط		
13.		الانحدار		
14.		الانحدار		
15.		الانحدار		

# Informatics & Assembly language

تطبيقات حاسوبي و لغة تجميع

## Course Weekly outline

تطبيقات حاسوبية

week		Topics Covered	Lab. Experiment Assignments	Notes
1.		Computer system . Information Technology . Types of computer . Parts of computer	Windows	
2.		Central Processing Unit ( CPU ) . Input devices . Output devices.	Windows	
3.		Kinds of memory .	Microsoft word	
4.		Data representation in the memory . Memory chips	Microsoft word	
5.		Storage devices ( secondary storage ) . Kinds of storage devices . Stored data . Computer performance .	Microsoft word	
6.		Computer software . Generations of programming languages Compilers and interpreters .	Microsoft PowerPoint	
7.		Operating systems . Functions of operating systems . Types of operating systems .	Microsoft PowerPoint	
8.		Applications software . Types of software according to source . Interfaces . System development . Multimedia .	Microsoft PowerPoint	
9.		Data communication . Local Area Network ( LAN ) .	Microsoft Excel	
10.		Wide Area Network ( WAN ) . WAN devices .	Microsoft Excel	
11.		Network Topologies. Data communication hardware .	Internet	
12.		Protocols . The internet	Internet	

13.		Computers at home , work , education . Computer Based Training ( CBT ). Software copyright . Licensing . Backups . Personal data . Privacy . Security .	MS-DOS commands .	
14.		Viruses . Protecting from viruses . Security systems . Computer crimes . Access .	MS-DOS commands .	
15.		Numbers representation ( unsign ,sign ,1's complement , 2's complement ).	MS-DOS commands .	
16.		Numbers representation ( unsign ,sign ,1's complement , 2's complement ).		

**Computer Organization**  
تنظيم حاسوب  
**Course Weekly outline**  
تنظيم حاسوب (١)

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Basic logic design	Learn kit device	
2.	Basic logic design	Application to kit	
3.	Binary representation	Application to kit	
4.	Data and control inf.	Application to kit	
5.	Data and control inf.	Application to kit	
6.	Logical properties	Application to kit	
7.	Gates and Boolean	Application to kit	
8.	Gates and Boolean	Application to kit	
9.	Gates and Boolean	Application to kit	
10.	Data representation	Application to kit	
11.	Binary codes	Application to kit	
12.	Binary codes	Application to kit	
13.	Decoders	Application to kit	
14.	Arithmetic circuits	Application to kit	
15.	Number system	Application to kit	
16.	Number system	Application to kit	

تنظيم حاسوب (٢)				
17.	28/2	K_map	Application to kit	
18.	5/3	K_map	Application to kit	
19.	12/3	Design procedure	Application to kit	
20.	19/3	Multiplexers and Demultiplexers	Application to kit	
21.	26/3	Binary adders (half-full adders)	Application to kit	
22.	2/4	Binary subtraction and binary adder_subtractors	Application to kit	
23.	9/4	Sequential circuits	Application to kit	
24.	16/4	Latches (SR and CR latch ,d_latch)	Application to kit	
25.	23/4	Flip-flops	Application to kit	
26.	30/4	Master-slave flip-flop(SR and JK)	Application to kit	
27.	7/5	Registers and Counters	Application to kit	
28.	14/5	Registers and Counters	Application to kit	
29.	21/5	Registers and Counters	Application to kit	

**Human Rights**  
حقوق إنسان  
**Course Weekly outline**

week	Topics Covered	Lab. Experiment Assignments	Notes
1	نظام الحكم في الدول المعاصرة / تعريف نظام الحكم /		
2	مفهوم الدولة والفرق بينها وبين المصطلحات السياسية الأخرى		
3	عناصر قيام الدولة وأشكالها		
4	وسائل إسناد السلطة في الدول المعاصرة (الوسائل التقليدية – الوسائل الحديثة)		
5	وسائل إسناد السلطة في الدول المعاصرة (الوسائل التقليدية – الوسائل الحديثة)		
6	النظام الديمقراطي (تعريف الديمقراطية ، التطور التاريخي للنظام الديمقراطي )		
7	علاقة النظام الديمقراطي بغيره من الأنظمة		
8	صور النظام الديمقراطي (حكم الشعب لنفسه بنفسه المزايا والعيوب ) حكم الشعب بواسطة النواب المزايا والعيوب		
9	صور النظام الديمقراطي (حكم الشعب لنفسه بنفسه المزايا والعيوب ) حكم الشعب بواسطة النواب المزايا والعيوب		
10	مفهوم الديمقراطية شبه المباشرة المزايا		

		والعيوب ، مظاهر الديمقراطية شبه المباشرة الكاملة والجزئية		
11		مفهوم النظام النيابي وصوره (النظام النيابي البرلماني ، الرئاسي ، المختلط )		
12		خصائص النظام النيابي		
13		خصائص النظام النيابي		
14		التعريف بالشورى ومصادرها وأهميتها وجوهرها		
15		الشورى وصور الديمقراطية		

**Course Weekly outline**  
**Algorithms and Structured Programming Using ( C )**  
خوارزميات وبرمجة مهيكلة بلغة سي  
خوارزميات وبرمجة مهيكلة بلغة سي (١)

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Flowcharts - Simple sequential flowchart - Branch flowchart		
		Application of theory using C language	
2.	Loop flowchart - Condition iteration loop - Definite iteration loop		
		Application of theory using C language	
3.	Identifier names Variables		
		Application of theory using C language	
4.	Data types Initialization of variables Constant		
		Application of theory using C language	
5.	Assignment operator Arithmetic operators Compound assignment operators		
		Application of theory using C language	
6.	Relational operators Logical operators Precedence of operators		
		Application of theory using C language	
7.	Control statements and decision making - If statement - If---else statement		
		Application of theory using C language	
8.	- Nested if statement Switch statement		
		Application of theory using C language	

9.		Iteration statements - The for loop - The while loop		
			Application of theory using C language	
10.		- The do {...} while loop - The break statement - The continue statement		
			Application of theory using C language	
11.		Various programs of if, for, while and do while statements		
			Application of theory using C language	
12.		Functions - Function definition		
			Application of theory using C language	
13.		- Return variable Recursion function		
			Application of theory using C language	
14.		Arrays - One dimensional array - Initializing arrays - Access to the values of an array - Reading/writing the array		
			Application of theory using C language	
15.		- Two dimensional array - Initializing arrays		
			Application of theory using C language	
16.		- Reading/writing arrays - Sorting 1D-2D arrays		
			Application of theory using C language	
<b>خوارزميات وبرمجة مهيكلة بلغة سي (٢)</b>				
17.		String of characters - Initialization of strings		
			Application of theory using C language	
18.		- Reading /writing a string(string input/output)		
			Application of theory using C language	
19.		- Functions to manipulate strings		
			Application of theory using C language	
20.		Pointers - Declaring and initializing pointers		
			Application of theory using C language	
21.		- The indirection operator		
			Application of theory using C language	
22.		- Functions that return pointers		
			Application of theory using C language	
23.		Structures - Defining a structure		
			Application of theory using C language	
24.		Read/write structure - Arrays of structure		
			Application of theory using C language	

25.		Nested structure		
			Application of theory using C language	
26.		Files - Text file		
			Application of theory using C language	
27.		The file pointer Opening/closing a file - Using feof()		
			Application of theory using C language	
28.		Using rewind()		
			Application of theory using C language	
29.		Read & write characters Read & write strings		
			Application of theory using C language	
30.		Fread () & fwrite ()		
			Application of theory using C language	

### Course Weekly outline

#### Algorithms and Structured Programming Using ( C )

خوارزميات وبرمجة مهيكلة بلغة سي  
خوارزميات وبرمجة مهيكلة بلغة سي (١)

week		Topics Covered	Lab. Experiment Assignments	Notes
1.		Flowcharts - Simple sequential flowchart - Branch flowchart		
			Application of theory using C language	
2.		Loop flowchart - Condition iteration loop - Definite iteration loop		
			Application of theory using C language	
3.		Identifier names Variables		
			Application of theory using C language	
4.		Data types Initialization of variables Constant		
			Application of theory using C language	
5.		Assignment operator Arithmetic operators Compound assignment operators		
			Application of theory using C language	
6.		Relational operators Logical operators Precedence of operators		
			Application of theory using C language	
7.		Control statements and decision making - If statement - If---else statement		
			Application of theory using C language	



8.		- Nested if statement Switch statement	Application of theory using C language	
9.		Iteration statements - The for loop - The while loop	Application of theory using C language	
10.		- The do {...} while loop - The break statement - The continue statement	Application of theory using C language	
11.		Various programs of if, for, while and do while statements	Application of theory using C language	
12.		Functions - Function definition	Application of theory using C language	
13.		- Return variable Recursion function	Application of theory using C language	
14.		Arrays - One dimensional array - Initializing arrays - Access to the values of an array - Reading/writing the array	Application of theory using C language	
15.		- Two dimensional array - Initializing arrays	Application of theory using C language	
16.		- Reading/writing arrays - Sorting 1D-2D arrays	Application of theory using C language	
<b>خوارزميات وبرمجة مهيكلة بلغة سي (٢)</b>				
17.	28/2	String of characters - Initialization of strings	Application of theory using C language	
18.	5/3	- Reading /writing a string(string input/output)	Application of theory using C language	
19.	12/3	- Functions to manipulate strings	Application of theory using C language	
20.	19/3	Pointers - Declaring and initializing pointers	Application of theory using C language	
21.	26/3	- The indirection operator	Application of theory using C language	
22.	2/4	- Functions that return pointers	Application of theory using C language	
23.	9/4	Structures - Defining a structure	Application of theory using C language	

24.	16/4	Read/write structure - Arrays of structure	Application of theory using C language
25.	23/4	Nested structure	Application of theory using C language
26.	30/4	Files - Text file	Application of theory using C language
27.	7/5	The file pointer Opening/closing a file - Using feof()	Application of theory using C language
28.	14/5	Using rewind()	Application of theory using C language
29.	٢٠/٥	Read & write characters Read & write strings	Application of theory using C language
30.	٢٦/٥	Fread () & fwrite ()	Application of theory using C language

Instructor Signature: HANAN H. ALI

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### Democracy

( ديمقراطية )

### Course Weekly outline

week	Topics Covered	Lab. Experiment Assignments	Notes
1	نظام الحكم في الدول المعاصرة / تعريف نظام الحكم /		
2	مفهوم الدولة والفرق بينها وبين المصطلحات السياسية الأخرى		
3	عناصر قيام الدولة وأشكالها		
4	وسائل إسناد السلطة في الدول المعاصرة (الوسائل التقليدية – الوسائل الحديثة)		
5	وسائل إسناد السلطة في الدول المعاصرة (الوسائل التقليدية – الوسائل الحديثة)		
6	النظام الديمقراطي (تعريف الديمقراطية ، التطور التاريخي للنظام الديمقراطي )		
7	علاقة النظام الديمقراطي بغيره من الأنظمة		
8	صور النظام الديمقراطي (حكم الشعب لنفسه بنفسه المزايا والعيوب ) حكم الشعب بواسطة النواب المزايا والعيوب		
9	مفهوم الديمقراطية شبه المباشرة المزايا والعيوب ، مظاهر الديمقراطية شبه المباشرة الكاملة والجزئية		
10	مفهوم الديمقراطية شبه المباشرة المزايا		

		والعيوب ، مظاهر الديمقراطية شبه المباشرة الكاملة والجزئية		
11		مفهوم النظام النيابي وصوره (النظام النيابي البرلماني ، الرئاسي ، المختلط )		
12		خصائص النظام النيابي		
13		التعريف بالشورى ومصادرها وأهميتها وجوهرها		
14		التعريف بالشورى ومصادرها وأهميتها وجوهرها		
15		الشورى وصور الديمقراطية		

### لغة تجميع

1.		Types of Microprocessors . 8088 /8086 Microprocessor . Execution unit and bus interface unit .	DEBUG command .	
2.		System bus . Addressing data in memory . Segment and addressing ( code , stack , data , extra segment ).	DEBUG command .	
3.		Segment offsets . Physical and logical address . Registers .	DEBUG command .	
4.		Segment registers . Pointer registers . General purpose registers .	Assembly program .	
5.		Index registers . Flag register .	Assembly program .	
6.		Addressing of instructions and data .	Assembly program .	
7.		Addressing modes .	Assembly program .	
8.		8088 / 8086 Instructions .	Assembly program .	
9.		8088 / 8086 Instructions .	Assembly program .	
10.		8088 / 8086 Instructions .	Assembly program .	
11.		8088 / 8086 Instructions .	Assembly program .	
12.		8088 / 8086 Instructions .	Assembly program .	
13.		8088 / 8086 Instructions .	Assembly program .	
14.		8088 / 8086 Instructions .	Assembly program .	
15.		Stack .	Assembly program .	
16.		Stack .	Assembly program .	

نظرية احتسابية

الملاحظات	المادة العملية	المادة النظرية	التاريخ	رقم
		Introduction, terminology, definitions, sets and operations.		١
		Regular expressions RE		٣ - ٢
		Finite automata FA, DFA, N DFA, & Converting between them.		٦ - ٤
		Moore & Mealy Machines		٨ - ٧
		Pumping lemma, Kleen's theorem		٩
		Regular grammar		١٠
		Context free languages		١٢ - ١١
		Pushdown automata		١٣
		Chomsky normal form		١٤
		Turing machines		١٦ - ١٥

هياكل متقطعة ونظرية احتسابية  
Course Weekly outline  
هياكل متقطعة

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Definition to discrete mathematics		
2.	Biconditional statement		
3.	Algebra of proposition		
4.	Laws of algebra of propositions		
5.	Predicates		
6.	Quantifiers		
7.	Set theory		
8.	Set operation		
9.	Venn Diagram		
10.	Laws of Set Operation		
11.	Cartesian product		
12.	Examples		
13.	Relations		
14.	Types of relations		
15.	Relation matrices & the graph of relation		

16.		Definitions of relations		
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المرحلة الثانية

**Data base management and design modern database**

إدارة قواعد بيانات و تصميم قواعد البيانات الموزعة

**Course Weekly outline**

إدارة قواعد بيانات

week		Topics Covered	Lab. Experiment Assignments	Notes
1.		Introduction to database	Introduction to visual fox pro 9.0	
2.		Database management system (DBMS)	Using command window	
3.		Data definition language (DDL) and Data manipulation language (DML)	Creating table & adding data	
4.		General aspects of database	Creating form (using wizard)	
5.		Data models	Creating reports (using wizard)	
6.		Entity-relationship model , attributes	Creating view (using wizard)	
7.		Entity type versus entity instance , entity type versus system input, output or user, strong versus weak entity types	Creating queries using SQL	
8.		Cardinality constraints	Creating database and adding tables	
9.		(--course exam--)	Link the tables using keys	
10.		The enhanced E-R model and business rules	Laboratory quiz #1	
11.		Supertype /subtype relationship, attributes inheritance	Using .PRG in programming	
12.		Representing specialization and generalization	General form for commands in visual fox pro 9.0	
13.		Specifying constraints in supertype /subtype relationships, supertype /subtype hierarchy	Laboratory quiz #2	
14.		Solved examples about ER-	Append command	

		<b>model &amp; EER-model</b>		
<b>15.</b>		<b>Logical database design and relational model</b>	<b>Brows commands</b>	
<b>16.</b>		<b>Introduction to normalization</b>	<b>Search command</b>	

البرمجة الكيانية  
**Object oriented JAVA**  
**Course weekly outline**  
البرمجة الكيانية (١)

<b>week</b>		<b>Topic covered</b>	<b>Lab. Experiment assignments</b>	<b>Notes</b>
<b>1</b>		سرد مفردات المنهج وشرحها واعطاء مقدمة عامة	<b>Application of theory</b>	
<b>2</b>		C++ Or C# language; data type;variable;declaration;arithmeticooper	<b>Application of theory</b>	
<b>3</b>		Control; statement; conditional statements	<b>Application of theory</b>	
<b>4</b>		Repetition statements	<b>Application of theory</b>	
<b>5</b>		Array (two dimensional &one dimension) definition	<b>Application of theory</b>	
<b>6</b>		subroutines	<b>Application of theory</b>	
<b>7</b>		Real from keyword(char;string;integer)	<b>Application of theory</b>	
<b>8</b>		String handling methods	<b>Application of theory</b>	
<b>9</b>			<b>Application of theory</b>	
<b>10</b>			<b>Application of theory</b>	
<b>11</b>		Classes and encapsulation	<b>Application of theory</b>	
<b>12</b>		Constructors and implementation	<b>Application of theory</b>	
<b>13</b>			<b>Application of theory</b>	
<b>14</b>			<b>Application of theory</b>	
<b>15</b>		Over loading and polymorphism	<b>Application of theory</b>	
<b>16</b>			<b>Application of theory</b>	

البرمجة الكيانية (٢)

17		Polymorphism continue	Application of theory	
18			Application of theory	
19		Static, final nested classes definition & uses	Application of theory	
20		inheritance	Application of theory	
21			Application of theory	
22		Using super function	Application of theory	
23		Multilevel inheritance	Application of theory	
24		Method override	Application of theory	
25		Obstruct classes	Application of theory	
26		packages'	Application of theory	
27			Application of theory	
28		Inter face	Application of theory	
29			Application of theory	
30		i/o file operations	Application of theory	
31			Application of theory	
32			Application of theory	

**Systems Software**  
 أنظمة البرمجيات  
**Course Weekly outline**  
 أنظمة البرمجيات (١)

week		Topics Covered	Lab. Experiment Assignments	Notes
1.		Introduction to subject	Application of theory	
2.		Introduction to system software computer organization	Application of theory	
3.		Application programs , system programs, translators	Application of theory	
4.		Debugger , editor	Application of theory	
5.		Representation of information in computer basic architecture of 8086 microprocessor BIU,EU	Application of theory	
6.		Instruction type based on no. of operand	Application of theory	
7.		Pseudo assembly instruction and difference from execution instruction	Application of theory	
8.			Application of theory	
9.			Application of theory	
10.		How to translate instruction from assembly to machine	Application of theory	
11.			Application of theory	
12.		Two pass assembler lecture1	Application of theory	
13.		Two pass assembler lecture2	Application of theory	
14.		One pass assembler	Application of theory	
15.			Application of theory	
16.			Application of theory	

**أنظمة البرمجيات (٢)**

17.		Absolute loader	Application of theory	
18.		Relocating loader	Application of theory	
19.		Linking loader pass1&pass2	Application of theory	
20.		Linkage editor	Application of theory	
21.		Dynamic loader	Application of theory	
22.		=	Application of theory	
23.		Subprograms	Application of theory	
24.		=	Application of theory	
25.		Macros	Application of theory	
26.		=	Application of theory	
27.		The differences between (EXE)&(com) files	Application of theory	
28.		Absolute loader	Application of theory	



29.		Relocating loader	<b>Application of theory</b>	
30.		Linking loader pass1&pass2	<b>Application of theory</b>	
31.		Linkage editor	<b>Application of theory</b>	
32.		Dynamic loader	<b>Application of theory</b>	

**تصميم قواعد البيانات الموزعة**

1.		<b>The relational data model, relational data</b>	<b>Writing a program in .PRG</b>	
2.		<b>Transforming EER diagrams into relations</b>	<b>Loop statements</b>	
3.		<b>Physical database design</b>	<b>Condition statements</b>	
4.		<b>Client/server database environment</b>	<b>Example programs</b>	
5.		<b>Client/server system architecture</b>	<b>Laboratory quiz #1</b>	
6.		<b>Three-tier architecture</b>	<b>Create tables using SQL create table command</b>	
7.		<b>Introduction to distributed database</b>	<b>Using SQL queries for one-data view of n-files</b>	
8.		<b>Distributed Database characteristics</b>	<b>Using aliases in databases</b>	
9.		<b>(--course exam--)</b>	<b>Laboratory quiz #2</b>	
10.		<b>Horizontal partitioning</b>	<b>Building project in visual fox pro- part1</b>	
11.		<b>Vertical partitioning</b>	<b>Building small project in visual foxpro-part2</b>	
12.		<b>Introduction to data warehouse</b>	<b>Building project in visual fox pro- part3</b>	
13.		<b>Basic concepts of data warehouse</b>	<b>Building project in visual fox pro- part4</b>	
14.		<b>Data warehouse architecture</b>	<b>Building project in visual fox pro- part5</b>	
15.		<b>Introduction to data mining</b>	<b>Building project in visual fox pro- part6-final</b>	
16.		<b>Data mining techniques</b>	<b>Building project in visual fox pro- part7-final</b>	

## Freedoms

حريات

week	Topics Covered	Lab. Experiment Assignments	Notes
1	تعريف الحريات العامة		
2	التطور التاريخي للحريات العامة		
3	التطور التاريخي للحريات العامة		
4	الحريات العامة في الفكر الإسلامي		
5	الحريات العامة في الوثائق الوطنية والدولية والاقليمية		
6	أنواع الحريات العامة في الإعلانات والمواثيق الدولية والاقليمية		
7	أنواع الحريات العامة في الإعلانات والمواثيق الدولية والاقليمية		
8	أنواع الحريات العامة في الشريعة الإسلامية / الحريات المتعلقة بمصالح الأفراد المادية		
9	الحريات المتعلقة بمصالح الأفراد المعنوية		
10	الحريات المتعلقة بمصالح الأفراد المعنوية		
11	ضمانات حقوق الإنسان		
12	ضمانات حقوق الإنسان		
13	إقرار مبدأ المشروعية		
14	إقرار مبدأ الفصل بين السلطات		
15	الحماية القضائية		

## Computer Graphics

الرسم بالحاسوب

### Course Weekly outline

الرسم بالحاسوب

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Introduction to display system CRT, Plasma, LCD system	Introduction to graphics programming Simple graphics program	
2.	Line drawing algorithm DDA Line algorithm	Line functions Text & set style function	
3.	Bresenham's algorithm	Polygons & image display functions	
4.	Circle generating algorithms Properties of circles Midpoint circle algorithm	DDA program	

5.	Ellipse generating algorithm Properties of Ellipse Midpoint Ellipse Algorithm	Bresenham program Circle, arc functions	
6.	Area Filling Algorithm Scan Line Algorithm	Midpoint circle program	
7.	Boundary fill algorithm Fill style	Ellipse, Sector, fill ellipse functions Midpoint Ellipse program	
8.	Concept of Animation 2-D Figure Animation Clipping Algorithm	Implement rectangle & triangle filling Implement circle area filling	
9.	Cohen-sutherland Line clipping	Implement Ellipse area filling Implement pattern fill	
10.	2-D (Translate-Scale-Rotate)	Point clipping program Implement simple animation program Point clipping program	
11.	2-D Matrix Transformation	Cohen-sutherland program	
12.	2-D Reflection & Shearing	Implement (Translate-Scale- Rotate)	
13.	3-D Graphics concept 3-D (translate-Scaling)	Implement 2-D using matrix	
14.	3-D Rotation 3-D Reflection 3-D Shearing	Implement reflection & shearing	
15.	The viewing Pipeline Window to view port coordinate transformation	Implement view port program	
16.	Graphics File Format	Display BMP	

## Numerical Methods

طرق عددية

### Course Weekly outline

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	توضيح مفهوم الطرق العددية		
2.	أنواع الأخطاء وكيفية إيجاد مواقع الجذور	تطبيق النظري	
3.	طرق إيجاد الجذور التقريبية للمعادلات الخطية طريقة التصنيف	تطبيق النظري	
4.	طريقة الموقع الكاذب وطريقة نيوتن رافسون	تطبيق النظري	
5.	المصفوفات\ منظومات المعادلات الخطية	تطبيق النظري	

		وطرق حلها	
6.		طريقة الحذف لكاوس،كاوس جوردن	تطبيق النظري
7.		طريقة جاكوبي و طريقة كاوس سيدل	تطبيق النظري
8.		الاندراج والاستكمال متعددة حدود لاكرانج معكوس لاكرانج	تطبيق النظري
9.		الفروقات المنتهية وأنواعها الفروقات الأمامية والتراجعية	تطبيق النظري
10.		الفروقات النسبية	تطبيق النظري
11.		الاشتقاق العددي باستخدام الفروقات المنتهية	تطبيق النظري
12.		التكامل العددي طريقة شبه المنحرف و طريقة سمبسون	تطبيق النظري
13.		مقدمة عن الحل العددي للمعادلات التفاضلية	تطبيق النظري
14.		طريقة اويلر ، طريقة رانج كوتا	تطبيق النظري
15.		discussion	تطبيق النظري

## Data base management and design modern database

إدارة قواعد بيانات و تصميم قواعد البيانات الموزعة

### Course Weekly outline

إدارة قواعد بيانات

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Introduction to database	Introduction to visual fox pro 9.0	
2.	Database management system (DBMS)	Using command window	
3.	Data definition language (DDL) and Data manipulation language (DML)	Creating table & adding data	
4.	General aspects of database	Creating form (using wizard)	
5.	Data models	Creating reports (using wizard)	
6.	Entity-relationship model , attributes	Creating view (using wizard)	
7.	Entity type versus entity instance , entity type versus system input, output or user, strong versus weak entity types	Creating quires using SQL	
8.	Cardinality constraints	Creating database and adding tables	
9.	(--course exam--)	Link the tables using keys	
10.	The enhanced E-R model and business rules	Laboratory quiz #1	

11.		<b>Supertype /subtype relationship, attributes inheritance</b>	<b>Using .PRG in programming</b>	
12.		<b>Representing specialization and generalization</b>	<b>General form for commands in visual fox pro 9.0</b>	
13.		<b>Specifying constraints in supertype /subtype relationships, supertype /subtype hierarchy</b>	<b>Laboratory quiz #2</b>	
14.		<b>Solved examples about ER-model &amp; EER-model</b>	<b>Append command</b>	
15.		<b>Logical database design and relational model</b>	<b>Brows commands</b>	
16.		<b>Introduction to normalization</b>	<b>Search command</b>	
<b>تصميم قواعد البيانات الموزعة</b>				
17.		<b>The relational data model, relational data</b>	<b>Writing a program in .PRG</b>	
18.		<b>Transforming EER diagrams into relations</b>	<b>Loop statements</b>	
19.		<b>Physical database design</b>	<b>Condition statements</b>	
20.		<b>Client/server database environment</b>	<b>Example programs</b>	
21.		<b>Client/server system architecture</b>	<b>Laboratory quiz #1</b>	
22.		<b>Three-tier architecture</b>	<b>Create tables using SQL create table command</b>	
23.		<b>Introduction to distributed database</b>	<b>Using SQL queries for one-data view of n-files</b>	
24.		<b>Distributed Database characteristics</b>	<b>Using aliases in databases</b>	
25.		<b>(--course exam--)</b>	<b>Laboratory quiz #2</b>	
26.		<b>Horizontal partitioning</b>	<b>Building project in visual fox pro- part1</b>	
27.		<b>Vertical partitioning</b>	<b>Building small project in visual foxpro-part2</b>	
28.		<b>Introduction to data warehouse</b>	<b>Building project in visual fox pro- part3</b>	
29.		<b>Basic concepts of data warehouse</b>	<b>Building project in visual fox pro- part4</b>	
30.		<b>Data warehouse architecture</b>	<b>Building project in visual fox pro- part5</b>	
31.		<b>Introduction to data mining</b>	<b>Building project in visual fox pro- part6-</b>	

			final	
32.		Data mining techniques	Building project in visual fox pro- part7-final	

لغة عربية  
Course Weekly outline

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	المبتدأ و الخبر		
2.	الفعل الماضي و المضارع و الأمر		
3.	المفعول به		
4.	المفعول فيه و المفعول المطلق		
5.	اسم الفاعل و اسم المفعول		
6.	صيغة المبالغة و علامات الاعرب		
7.	صيغة المبالغة و علامات الاعرب		
8.	الأفعال الناقصة و الحروف المشبهة بالفعل		
9.	الأفعال الناقصة و الحروف المشبهة بالفعل		
10.	علم البيان و التشبيه و المجاز		
11.	علم البيان و التشبيه و المجاز		
12.	الاستعارة		
13.	علم البديع و الجناس		
14.	علم البديع و الجناس		
15.	الطباق و المقابلة		
16.	الطباق و المقابلة		

**Simulation and Computer Modeling**  
محاكاة ونمذجة

**Course Weekly outline**

**Half-year Break**

week	Topics Covered
1.	Modeling, Model, Variables, The (Continuous, Discrete) es
2.	System Representation: تمثيل النظام , مراحل النمذجة
3.	نماذج المحاكاة الحاسوبية، تصنيف نماذج المحاكاة الحاسوبية، مراحل المحاكاة الحاسوبية
4.	Introduction to( Expectation, Variance, Correlation & Standard Deviation

5.		The application of (Expectation, Variance, Correlation & Standard dev.) by Matlab.
6.		Introduction to the Randomize numbers.
7.		Generator of Randomize numbers. Generating The R.No using Matlab
8.		جوانب عملية في المحاكاة الحاسوبية
9.		Quiz
10.		التحقق من النموذج وتحليل المدخلات والمخرجات
11.		قياس نسبة الملائمة بين مخرجات النظام الحقيقي و نموذج المحاكاة
12.		Analysis of Errors
13.		مقدمة عن التجارب العملية في المحاكاة الحاسوبية
14.		المحاكاة الحاسوبية باستخدام Matlab
15.		SimEvents محاكاة الاحداث
16.		Quiz

### Engineering

مقدمة في هندسة برمجيات

### Course Weekly outline

مقدمة في هندسة برمجيات (1)

Week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Software & software Engineering	Visual basic.net	
2.	Project management	Visual basic.net	
3.	Project estimation	Visual basic.net	
4.	Project planning	Visual basic.net	
5.	Software project scheduling	Visual basic.net	
6.	System & software requirements analysis	Visual basic.net	
7.	Requirement analysis fundamental	Visual basic.net	
8.	Structured analysis	Visual basic.net	
9.	Object-oriented analysis	Visual basic.net	
10.	Data modeling	Visual basic.net	
11.	Alternative analysis techniques	Visual basic.net	
12.	The design	Visual basic.net	
13.	Fundamental	Visual basic.net	
14.	Data design	Visual basic.net	
15.	Procedural design	Visual basic.net	
16.	Design documentation	Visual basic.net	

مقدمة في هندسة برمجيات (٢)

17.	Data flow oriented design	Visual basic.net	
18.	Object-oriented design	Visual basic.net	
19.	Data-oriented design methods	Visual basic.net	
20.	User interface design	Visual basic.net	
21.	Real time software design	Visual basic.net	
22.	Programming languages and coding	Visual basic.net	
23.	Software quality assurance	Visual basic.net	
24.	Software testing	Visual basic.net	
25.	Software testing strategies	Visual basic.net	
26.	Software maintenance	Visual basic.net	
27.	SW configuration	Visual basic.net	
28.	The role of automation	Visual basic.net	
29.	1. building blocks	Visual basic.net	
30.	2. supports tools	Visual basic.net	
31.	3.analysis , programming, and testing	Visual basic.net	
32.	4.integration	Visual basic.net	

هياكل بيانات و خوارزميات باستخدام لغة JAVA

**Algorithms and data structure Using JAVA**

**Course Weekly outline**

هياكل بيانات و خوارزميات (١)

week	Topics Covered	Lab. Experiment Assignments	Notes
1.	Data representation Abstract Data Types Physical representation of data Logical representation of data &array definition	<b>Application of theory</b>	
2.	Introduction to java language and explain basic concept of OOP	<b>Application of theory</b>	
3.	Procedure oriented programming	<b>Application of theory</b>	
4.	Characteristic of procedure oriented programming characteristic of OOP	<b>Application of theory</b>	
5.	Variables &constant in java Java primitive type Assignment statement with primitive type	<b>Application of theory</b>	
6.	Java language statements	<b>Application of theory</b>	



7.		One dimensional array representation in memory calculation the address of two dimensional array Two dimensional array definition calculation the address of two dimensional array	<b>Application of theory</b>	
8.		Definition of multi dimensional array and calculation its address Definition of structure in c++ Calculation the address of structure in c++	<b>Application of theory</b>	
9.		Stack	<b>Application of theory</b>	
10.		Stack application Convert infix to postfix using two stack Convert infix to postfix using single stack	<b>Application of theory</b>	
11.		Calculation infix to expression by using two stack Calculation postfix expression by using single stack	<b>Application of theory</b>	
12.		Queue Queue representation Queue algorithm	<b>Application of theory</b>	
13.		Queue application Circular queue	<b>Application of theory</b>	
14.		Linked list Creating a linked list of one node Inserting and removing nodes from a list	<b>Application of theory</b>	
15.		Adding element to the front of a list Removing a first node of anon empty list Insert end Insert first Print list	<b>Application of theory</b>	
16.		Insert end Linked implementation of stack Linked implementation of queue	<b>Application of theory</b>	
<b>هياكل بيانات و خوارزميات (٢)</b>				
17.		Doubly linked list insert a first node in the doubly linked list print list.	<b>Application of theory</b>	

18.		-Insert anode within formation field x to the right of node (p) in doubly linked list (insert right) -insert anode to be the first node in the left - insert anode to be the first node in the right - insert a specific node	<b>Application of theory</b>	
19.		Insert anode before a specific node Insert anode after a specific node Delete anode by its info field	<b>Application of theory</b>	
20.		Insert anode before the node which its order n insert middle.	<b>Application of theory</b>	
21.		Delete anode by its sequence Advantatage of sequential storage disadvantatage of sequential storage Advantatage of dynamic storage disAdvantatage of sequential storage	<b>Application of theory</b>	
22.		Binary tree Basic definitions of binary tree Application of binary tree.	<b>Application of theory</b>	
23.		Traverse algorithm of binary tree Traverse procedure of binary tree	<b>Application of theory</b>	
24.		Convert infix expression to postfix and prefix expression b using binary tree.	<b>Application of theory</b>	
25.		Representation of arithmetic expression by using binary tree.	<b>Application of theory</b>	
26.		Sort The purpose of sort Type of sort	<b>Application of theory</b>	
27.		Selection sort algorithm Selection sort procedure	<b>Application of theory</b>	
28.		Bubble sort algorithm Bubble sort procedure	<b>Application of theory</b>	
29.		Insertion sort algorithm Bubble sort procedure	<b>Application of theory</b>	
30.		Quick sort algorithm Quick sort procedure	<b>Application of theory</b>	
31.		Searching algorithm	<b>Application of theory</b>	

		Type of search Sequential search procedure		
32.		Sequential search procedure Binary search Binary search algorithm Binary search procedure	<b>Application of theory</b>	

### المرحلة الثالثة

برمجة كيانية بلغة

#### Course weekly outline

week		Topic covered	Lab. Experiment assignments	Notes
1		سرد مفردات المنهج وشرحها واعطاء مقدمة عامة	Application of theory	
2		Java language; data type;variable;declaration;arithmeticoper	Application of theory	
3		Control; statement; conditional statements	Application of theory	
4		Repetition statements	Application of theory	
5		Array (two dimensional &one dimension) definition	Application of theory	
6		subroutines	Application of theory	
7		Real from keyword(char;string;integer)	Application of theory	
8		String handling methods	Application of theory	
9			Application of theory	
10			Application of theory	
11		Classes and encapsulation	Application of theory	
12		Constructors and implementation	Application of theory	
13			Application of theory	
14			Application of theory	
15		Over loading and polymorphism	Application of theory	
16			Application of	

			theory	
17		Polymorphism continue	Application of theory	
18			Application of theory	
19		Static, final nested classes definition & uses	Application of theory	
20		inheritance	Application of theory	
21			Application of theory	
22		Using super function	Application of theory	
23		Multilevel inheritance	Application of theory	
24		Method override	Application of theory	
25		Obstruct classes	Application of theory	
26		packages'	Application of theory	
27			Application of theory	
28		Inter face	Application of theory	
29			Application of theory	
30		i/o file operations	Application of theory	

تصميم مترجمات

### Course Weekly outline

week		Topics Covered	Lab. Experiment Assignments	Notes
1		Introduction (Definitions, why Compiler,...etc)		
1		A brief explanation for ( Translator, Assembler, Compiler, Interpreter, Source program, Components of the Compiler )	Programming first algorithm of DFA method	
2		Component of a Compiler	Second algorithm of DFA method	
2		Types of FSA	Third algorithm of DFA	

			method	
3		Scanning (Lexical analyzer)	Third algorithm of DFA method	
3		Source program, tokens, symbol table, lateral table,	Scanning Program	
4		Types of grammar (type1, type2,.....)	Scanning Program	
4		Parser (syntax analyzer)	Scanning Program	
5		Top down parsing.	Scanning Program	
5		Functions First & Follow	Scanning Program	
6		Constructing Parsing table	Parsing program 1	
6		LL(1) grammar conditions	Parsing program 2	
7		Left recursion with example	Parsing program 3	
7		Left factoring with example	Parsing program 4	
8		Ambiguous grammar		
9		Examples		
10				
10		Error Recovery in predictive parsing	Parsing program 5	
11		Bottom_up parsing definitions.	Bottom_up Parsing program	
11		Operator Precedence grammar.	Error recovery Prog.	
12		Functions: FirstOP and LastOP.	=	
12		Examples	Operator precedence program	
13		LR_Parser : Simple LR parser (SLR )	=	
13		Functions: Goto & ACTION	SLR program	
14		Constructing SLR parsing table	=	
14		Start operation & The Closure function & the goto function	=	
14		Examples	=	
15		Canonical LR parsing	Canonical program	
15		Constructing Canonical LR parsing table Functions: Goto & Closer	=	
15		LALR parsing	=	
15		Constructing LALR parsing table	=	

**Instructor Signature: : Aseel W. Ali**

**Dean Signature:**

شبكات الحاسوب والانترنت (١)  
Course Weekly outline

week		Topics Covered	Lab. Experiment Assignments	Notes
1		Introduction – Networking Fundamental	Application of theory	
1		Network topologies	Application of theory	
2		Network architectures	Application of theory	
3		Transmission media	Application of theory	
4		OSI model	Application of theory	
5		signals	Application of theory	
6		Wireless networks	Application of theory	
7		Noise and while noise	Application of theory	
8		Modulation & Attenuation	Application of theory	
9		Network device	Application of theory	
10		Multiplying	Application of theory	
11		Encoding	Application of theory	
12		Clock synchronization	Application of theory	
13		Rs_232 interrface	Application of theory	
14		Ethernet& frame Structure	Application of theory	
15		Token R ing	Application of theory	

شبكات الحاسوب والانترنت (٢)

**Second Semester**

1		Error detection& correction	Application of theory	
2		Circle Switching	Application of theory	
3		Terminal hading(polling)	Application of theory	
4		TCP / IP player	Application of theory	

5		Data link layer	Application of theory	
6		IP addressing	Application of theory	
7		Subnet addressing	Application of theory	
8		Routing	Application of theory	
9		ARP & RARP	Application of theory	
10		Internet Protocol V4	Application of theory	
11		Internet Protocol V6	Application of theory	
12		ICMP	Application of theory	
13		IGMP	Application of theory	
14		UDP, TCP	Application of theory	
15		Internet Applications and Services	Application of theory	

لغات برمجة كائنية التوجه بلغة فيجول بيسك

### Course weekly outline

Week	Subject
(1)	<i>Introduction to Programming languages &amp; VB Language with its environment.</i> <b>Definition:</b> Compiler, Interpreter, Assembler, Low Level
(2)	Microsoft Access: Database definition, design tables
(3)	Design queries, forms and reports. Join Tables 1 <sup>st</sup> tutorial.
(4)	<b>Visual Basic:</b> Design GUI with different controls: Command buttons, labels, text boxes, check boxes, option buttons, frames, Image, Picture box. 2 <sup>nd</sup> Tutorial.
(5)	<i>Data Types:</i> integer, Single, String, long, double ...etc. <i>Input/output statements:</i> inputbox, msgbox, Print, Textbox <i>Operators:</i> arithmetic, relational, logical
(6)	<i>Expressions:</i> arithmetic and logical with precedence rule Examples about data types and operators. 3 <sup>rd</sup> tutorial. <b>First Exam</b>
(7)	<b>Conditional structures: if ... then statement.</b> Simple If ... then ... else statement

(8)	.Examples about if statement
(9)	<i>Repetition structures:</i> for ... next statement. 4 <sup>th</sup> tutorial.
(10)	More examples about for ... next statement. While ... wend statement.
(11)	More examples about while ... wend statement. 5 <sup>th</sup> tutorial <b>Second Exam.</b>
(12)	<i>One-dimensional array.</i>
(13)	More examples about array . ( Minimum , Maximum , Sum , Average, Count, Search, ...) 6 <sup>th</sup> tutorial.
(14)	<i>Graphics:</i> line, square, and circle with different properties.
(15)	<i>Strings:</i> length, concatenate, left, right, mid, lower, upper . 7 <sup>th</sup> tutorial
(16)	<b>Final Exam Review</b>

**Course Weekly outline  
First Semester**

week	Topics Covered	Notes
1	Requirements analysis fundamentals, Analysis tasks, The Analyst	
1	Problem area	
2	Communication Techniques 1-Initiating the process 2-Facilitated Application Specification Techniques	
2	Analysis principles	
3	Software Prototyping 1-A Prototype Scenario 2-Prototyping Methods&Tools	
3	Specification Principles	
4	The Software Requirements Specification	
4	Structured Analysis & Its Extensions	
5	Data Flow Diagrams	
5	Extension for real time	
6	Word&Mellor extension	
6	Hatley&Pirbhai extension	
7	Data Dictionary, Structure	



		Charts(Block diagram& Warnier diagram)		
7		Software Requirement Document(SRD)		
8		The Requirement Dictionary		
8		UML(Unified Modeling Language)		
9		Requirement Analysis Methods 1-common characteristics. 2-differences in Analysis Methods.		
9		Automated Techniques For Requirements Analysis		
10		1-Software Requirement Engineering Methodology		
10		2-PSL/PSA		
11		3-TAGS,		
11		4-Specification Environments		
12		5-Tools for formal methods		
12		6-Automated Techniques		
13		Software Requirement Tools		
13		Software Requirement Tools		
14		Software Requirement Tools		
14		Software Requirement Tools		
15		Software Requirement Tools		
15		Software Requirement Tools		

معالجة ملفات وسريتها (١)  
Course Weekly Outline

		Topics covered	Lab. Experiment Assignments	Notes
1.		An overview of system architecture	Application of theory	
2.		I/O structure	Application of theory	
3.		I/O interrupts	Application of theory	
4.		Storage structure	Application of theory	
5.		Cache, buffer, bulks, pooling management	Application of theory	
6.		H.W and disk protection	Application of theory	

7.		File management	Application of theory	
8.		File concepts	Application of theory	
9.		File types	Application of theory	
10.		File structure	Application of theory	
11.		Access methods	Application of theory	
12.		Directory structure	Application of theory	
13.		Graph directory structure	Application of theory	
14.		Protection methods	Application of theory	
15.		Types of access	Application of theory	
16.		Consistency semantic	Application of theory	
<p>معالجة ملفات وسريتها (٢) Second Semester</p>				
17.		File system structure	Application of theory	
18.		File system mounting	Application of theory	
19.		Allocation methods	Application of theory	
20.		Linked and index allocation	Application of theory	
21.		Free space management	Application of theory	
22.		Directory implementation	Application of theory	
23.		File recovery	Application of theory	
24.		Back up and restore AND Error handling	Application of theory	
25.		Cipher system	Application of theory	
26.		Types of attack	Application of theory	
27.		Substitution cipher	Application of theory	
28.		Transposition cipher	Application of theory	
29.		Transposition cipher continue	Application of theory	

30.		File encryption techniques	Application of theory	
31.		Deciphering methods	Application of theory	
32.		Decipher methods	Application of theory	
33.		RSA encryption algorithms	Application of theory	

معمارية الحاسوب

### Half-year Break

1.		Memory Management	Programming of linux	
2.		Fragmentation	Programming of linux	
3.		Memory Protection	Programming of linux	
4.		Segmentation	Programming of linux	
5.		paging	Programming of linux	
6.		paging	Programming of linux	
7.		Dynamic Loading	Programming of linux	
8.		Dynamic Loading	Programming of linux	
9.		File-System Interface	Programming of linux	
10.		File-System Interface	Programming of linux	
11.		Access Methods		
12.		Access Methods		
13.		General Graph Directory		
14.		Protection		
15.		Protection		

**Course Weekly outline**

<b>week</b>	<b>Basic and support material to be covered</b>	<b>Homework/reports and their due dates</b>
(1)	Introduction: What is an OS?, Mainframe systems, Desktop Systems, Multiprocessor Systems, Distributed Systems...	
(2)	Overview computer-system architecture: Computer- System Operation, I/O structure, Storage Structure, Storage Hierarchy.....	<i>Assignment</i>
(3)	Operating-System, Structures: System, Components, O.S Devices, System Calls, System programs, System Structure....	
(4)	Process Management: Processes; Process Concept , Process Scheduling , Operations on Processes Cooperating processes,	
(5)	Threads: Multithreading Models, Threading Issues, PThreads, Solaris2 Threads.....	
(6) First exam	CPU Scheduling: Scheduling Criteria, Scheduling Algorithms, Multiprocessor Scheduling....	<i>Assignment</i>
(7)	Process Synchronization: The Critical-Section problem, Synchronization Hardware, Semaphores,,.....	<i>Tutorial</i>
(8)	Deadlocks: System Model, Deadlock Characterization, Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery.....	
(9)	Storage Management: Memory management, Swapping, Contiguous Memory Allocation, Paging, Segmentation....	<i>Tutorial</i>
(10)	Virtual Memory: Demand Paging, Process Creation, page Replacement, Allocation of Frames, Thrashing,.....	<i>Assignment</i>
(11) Second exam	File-System Interface: File Concept, Access Methods, Direct Structure.....	<i>Tutorial</i>
(12)	File-System Implementation: File System Structure, Direct implementation, Allocation Methods,.....	
(13)	I/O Systems,.....	<i>A report to be prepared by groups of three students about scheduling algorithms</i>

(14)	Windows 2000 overview, Unix,..... Lab	
(15)	Reports discussion	
(16) Final Exam	Final exam Review and discussion	

**Course Weekly Outline  
First Semester**

<b>Week</b>	<b>Date</b>	<b>Topic covered</b>	<b>Lab. Experiment assignments</b>	<b>Notes</b>
1		Artificial Intelligence Definition	Prolog language	
2		Searching: Introductory Concepts & State Space Search	Programming in logic(prolog) definition and variables	
3		Depth-first Search (Algorithm)	Fact, Rules examples	
4		Breadth-first Search (Algorithm)	Domains, predicates, clauses, goal examples	
5		Heuristic Search	Recursion, trace, cut, fail, examples	
6		Hill-Climbing (Algorithm)	List, sorting ,examples	
7		Best-first Search ( A* Algorithm)	Relationship between Data, Information & Knowledge	
8		<b>Natural Language Processing (NLP)</b>	Quiz	
9		Introduction and Definitions.	Programming Depth search (prolog)	
10		Understanding Single Sentence	Programming Breadth search	
11		Key word matching	Programming Hill-Climbing search-1	
12		Using Schemes & Scripts for understanding	Programming Hill-Climbing search-2	
13		An Example of a proposed architectural design for NLP	Programming Best-first search-1	
14		Genetic Algorithm definition, historical & scientific view	Quiz	
15		The basis of GA and uses ,GA cycle flowchart	Matlab Language	
16		Operating principle of GA &	Programming GA using	

		Encryption Chromosome	Matlab	
<b>Second Semester</b>				
17		Population size, selection, crossover ,mutation types	Programming GA using Matlab	
18		Likes a variety of practical work on GA, simulated hand Binary representation of chromosome.	Programming simulated hand-matlab	
19		Likes a variety of practical work on GA, simulated hand Real representation of chromosome.	Programming simulated hand-matlab	
20		What is Neural Network, definition, Artificial Neural Network, Biological Neural Network,	Programming complete GA cycle-matlab programming	
21		Where Are NN being use, signal processing, control, pattern recognition, medicine, speech production & recognition	Quiz	
22		Typical architecture of NN	Matlab Language	
23		Setting weights, supervised, unsupervised training & fixed weight Nets	Matlab Language	
24		Activation function types, matrix multiplication method for calculating net input	Matlab Language	
25		Perceptron NN, Algorithm, flowchart, simulated hand	Programming perceptron NN - Matlab	
26		Adaline NN, Algorithm, flowchart, simulated hand	Programming Adaline NN – Matlab	
27		Expert Systems (ES),definition,different between AI&ES	Quiz	
28		Introduction to Fuzzy Logic , Membership function.	Project recognition using GA	
29		Fuzzy sets& crisp setes	Project recognition using GA	
30		Logical operations of fuzzy logic {AND, OR, NOT}	Project recognition using NN	
31		Fuzzy inference system , defuzzification	Project recognition using NN	
32		Quiz	Quiz	

**Instructor Signature:**

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## المرحلة الرابعة

### ادارة مشاريع Course Weekly outline

week		Topics Covered	Lab. Experiment Assignments	Notes
1.		Introduction to project management	Application of theory	
2.		Review Project constrains	Application of theory	
3.		Main functions of project manager	Application of theory	
4.		Management of the Methodology	Application of theory	
5.		Project management tools	Application of theory	
6.		Project management software e.g. in Microsoft Project	Application of theory	
7.		Discussion	Application of theory	
8.		Cont. Project management software	Application of theory	
9.		Risk management	Application of theory	
10.		Cont. Risk management	Application of theory	
11.		Cont. Risk management	Application of theory	
12.		Time Management gantt chart	Application of theory	
13.		Cont. Time Management PERT chart	Application of theory	
14.		Discussion	Application of theory	
15.		Cost management	Application of theory	
16.		Cont. Cost management	Application of theory	
<b>Second Semester</b>				
17.		project-team management.	Application of theory	
18.		Cont. project-team management.	Application of theory	

19.		Cont. project-team management.	<b>Application of theory</b>	
20.		Quality Management and standards.	<b>Application of theory</b>	
21.		Cont. Quality Management and standards.	<b>Application of theory</b>	
22.		Cont. Quality Management and standards.	<b>Application of theory</b>	
23.		Software Estimation and Metrics	<b>Application of theory</b>	
24.		Cont. Software Estimation and Metrics	<b>Application of theory</b>	
25.		Cont. Software Estimation and Metrics	<b>Application of theory</b>	
26.		Process improvement	<b>Application of theory</b>	
27.		Cont. Process improvement	<b>Application of theory</b>	
28.		Discussion	<b>Application of theory</b>	
29.		Configuration Management	<b>Application of theory</b>	
30.		Documentation management	<b>Application of theory</b>	
31.		Change management	<b>Application of theory</b>	
32.		Discussion	<b>Application of theory</b>	

### Course Weekly outline

أساليب تطوير البرمجيات وجودتها

week		Topic covered	Lab. Experiment assignments	Notes
1		Introduction	<b>Application of theory</b>	
2		SDLC Software Development Life Cycle	<b>Application of theory</b>	
3		(RAD)Rapid Application development	<b>Application of theory</b>	
4		Prototype and Spiral development Approaches	<b>Application of theory</b>	
5		Agile software development	<b>Application of theory</b>	
6		Extreme Programming	<b>Application of theory</b>	



7		Software Testing Techniques	<b>Application of theory</b>	
8		Software Techniques	<b>Application of theory</b>	
9		Software Testing Strategies	<b>Application of theory</b>	
10		Software Testing Strategies	<b>Application of theory</b>	
11		Fault avoidance	<b>Application of theory</b>	
12		Fault tolerance	<b>Application of theory</b>	
13		Validation Testing	<b>Application of theory</b>	
14		System Sestina	<b>Application of theory</b>	
15		Debugging Process	<b>Application of theory</b>	
16			<b>Application of theory</b>	
<b>Second Semester</b>				
17		Software Quality Assurance (introduction)	<b>Application of theory</b>	
18		Quality Concepts	<b>Application of theory</b>	
19		Quality Assurance and Cost of Quality	<b>Application of theory</b>	
20		The Quality Movement	<b>Application of theory</b>	
21		Software Quality Assurance	<b>Application of theory</b>	
22		SQA Activities	<b>Application of theory</b>	
23		Software Reviews	<b>Application of theory</b>	
24		Formal Technical Reviews	<b>Application of theory</b>	
25		Formal Approaches to SQA	<b>Application of theory</b>	
26		Statistical Software Quality Assurance	<b>Application of theory</b>	
27		Software Reliability	<b>Application of theory</b>	
28		Software Safety	<b>Application of theory</b>	
29		Mistake-Proofing for Software	<b>Application of theory</b>	

30		The ISO 9000 Quality Standards	Application of theory	
31		The SQA Plan	Application of theory	

امنية معلومات

### Course Weekly outline

week		Topics Covered	Lab. Experiment Assignments	Notes
1		Information Security (definition)	Application of theory	
2		Security violations	Application of theory	
3		Security Attacks	Application of theory	
4		Security Mechanisms	Application of theory	
5		Security Services	Application of theory	
6		A model for Network Security	Application of theory	
7		Classical Encryption Techniques	Application of theory	
8		Classical Encryption Techniques	Application of theory	
9		Block Cipher Principles	Application of theory	
10		Public Key Cryptosystems	Application of theory	
11		Message Authentication	Application of theory	
12		Hash functions	Application of theory	
13		Introduers and Introsion Detection	Application of theory	
14		Password Management	Application of theory	
15		Viruses and related threats	Application of theory	
16		Firewalls	Application of theory	
<b>Second Semester</b>				
17		Information hiding (introduction)	Application of theory	
18		Principles and Steganography	Application of theory	
19		Steganographic Protocal	Application of theory	
20		Steganographic techniques(substitution systems)	Application of theory	
21		Steganographic techniques	Application of theory	
22		Steganographic techniques	Application of theory	
23		Transform Domain techniques	Application of theory	
24		Data Hiding in text	Application of theory	
25		Digital water marking(introduction)	Application of theory	
26		watermarking applications	Application of theory	
27		Effective design issue	Application of theory	

28		watermarking techniques	<b>Application of theory</b>	
29		Watermark embedding in transform domain (wavelet)	<b>Application of theory</b>	
30		Finger printing (introduction)	<b>Application of theory</b>	
31		Finger printing techniques	<b>Application of theory</b>	
32		Information hiding (introduction)	<b>Application of theory</b>	

تصميم نظم زمن حقيقي

**Course Weekly outline**

week		Topics Covered	Lab. Experiment Assignments	Notes
1		Introduction	Senors & indicators	
2		Issues in real time computing	Real time lang. labview	
3		Structure of real time system	Dataflow programming	
4		Task classes	Control indicator types (thermometers..etc)	
5		Architecture issues	Connecting hardware	
6		Operating system issues	DAQ and controlling physical processes	
7		Characterizing real time system and task	Waiting functions	
8		Perform measure for real time systems	Timings measuring execution time	
9		Properties of performance measures	Quiz	
10		Traditional performance measures	While loop	
11		Cost function and hard real time	For loop	
12		Estimating program run times	Auto indexing	
13		Accounting for pipelining	Array of controls	
14		Caches	clusters	
15		Task assignment and scheduling	Wave Form charts	
16		Classical uniprocessor scheduling algorithm	Quiz	
<b>Second Semester</b>				
17		rate monotonic algorithm		
18		First scheduler (EDF)		
19		Introduction	Strings in lab view	
		Examples about rate monotonic	Shift registers	
20		Preemptive earliest deadline	Sequence structure	
21		Examples about (EDF)	Case structure	
22		Allowing for precedence and exclusion conditions	semophones	

23		Using primary and alternative tasks	Local and global variable	
24		IRIS tasks	Sub VIS	
25		Priority inheritance	networking	
26		Priority ceiling	Data socket	
27		Multiprocessor real time system	Making schedule	
28		Utilization – Balancing algorithm	Quiz	
29		Next – fit algorithm for RM Scheduling	Debugging techniques	
30		A Bin – Packing Assignment algorithm	Tcp/Ip	
31		Myopic off line Scheduling	Calling code from other lang.	
32		Real time communication	Formula Functions	

**Instructor Signature:**

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محاكاة ونمذجة الحاسوب (١)

### Course Weekly outline

week	Topics Covered
1.	Modeling, Model, Variables, The (Continuous, Discrete ) Variables
2.	System Representation: تمثيل النظام, مراحل النمذجة
3.	Introduction to Simulink , Define Simulink
4.	نماذج المحاكاة الحاسوبية، تصنيف نماذج المحاكاة الحاسوبية، مراحل المحاكاة الحاسوبية
5.	Advantages & Disadvantages of Simulink , Computer Simulation
6.	Introduction to( Expectation, Variance, Correlation & Standard Deviation.)
7.	The application of (Expectation, Variance, Correlation & Standard dev.) by Matlab.
8.	Introduction to the Randomize numbers.
9.	Generator of Randomize numbers. Generating The R.No using Matlab
10.	Introduction to Time Series, Some Examples & Experiments of T.S
11.	جوانب عملية في المحاكاة الحاسوبية
12.	Algorithms of Generating the Randomize numbers (part: 1).
13.	Algorithms of Generating the Randomize numbers (part: 2).
14.	Applied algorithms by simulation

15.		التحقق من النموذج وتحليل المدخلات والمخرجات
16.		قياس نسبة الملاءمة بين مخرجات النظام الحقيقي و نموذج المحاكاة ,

محاكاة ونمذجة الحاسوب متقدمة (٢)		
Second Semester		
1.		Analysis of Errors
2.		The experimental Design.
3.		Simulation Experiments
4.		Yate's Algorithm
5.		مقدمة عن التجارب العاملة في المحاكاة الحاسوبية
6.		Applications of simulink.
7.		Monte Carlo Integration
8.		الإشارة الضوئية (Traffic Light)
9.		مقدمة عن الطوابير (Queuing)
10.		تطبيقات عن الطوابير
11.		Simulation of discrete event system
12.		المحاكاة الحاسوبية باستخدام Matlab
13.		المحاكاة الحاسوبية باستخدام Simulink
14.		SimEvents محاكاة الاحداث
15.		المحاكاة (Introduction Parallel & distributed Simulink) المتوازية والموزعة
16.		مسألة التزامن

معالجة الصور والاشارة (١)

Course Weekly outline

week		Topics Covered	Lab. Experiment Assignments	Notes
1		Introduction of Image processing	Application of theory	
2		Continuos fourier transformation	Application of theory	
3		Discrete fourier transformation	Application of theory	
4		Properties of the 2D Fourier transform(separability, Translation, Rotation, Distributive property, Scaling, Average value)	Application of theory	
5		Properties of the 2D Fourier transform (Convolution)	Application of theory	
6		Properties of the 2D Fourier transform ( Correlation)	Application of theory	
7		The Fast Fourier transform	Application of theory	
8		The inverse FFT	Application of theory	
9		Enhancement methods	Application of theory	
10		Smoothing method	Application of theory	
11		LPF in frequency domain	Application of theory	
12		Sharpening method	Application of theory	
13		High pass filtering in frequency domain	Application of theory	
14		Enhancement based on an image model	Application of theory	
15		Gray level to color transformation	Application of theory	
<p>معالجة الصور والاشارة (٢) Second Semester</p>				
16		Lossless Compression	Application of theory	
17		Lossless Compression	Application of theory	
18		Lossly Compression	Application of theory	
19		Edge detection	Application of theory	
20		Image segmentation	Application of theory	
21		Structure of special digital signal processors	Application of theory	
22		Signal input-single filter	Application of theory	
23		Single input-multiple filters	Application of theory	
24		Multiple input-single filter configuration	Application of theory	
25		Multiple input-multiple filter configuration	Application of theory	

<b>26</b>		Linear system	<b>Application of theory</b>	
<b>27</b>		Causal system	<b>Application of theory</b>	
<b>28</b>		Bounded input-Bounded output stability(BIBO)	<b>Application of theory</b>	
<b>29</b>		Sampling of continuous time signals	<b>Application of theory</b>	
<b>30</b>		Introduction of the sound	<b>Application of theory</b>	
<b>31</b>		Sound file format	<b>Application of theory</b>	