2014

كلية تقنية الحاسوب

طرابلس

College of Computer Technology Tripoli

بكالوريس هندسة و تطوير البرمجيات

2014 www.cctt.edu.ly

كلية تقنية الحاسوب طرابلس

مكتب الشؤون العلمية والتقنية

برنامج البكالوريس لقسم هندسة وتطوير البرمجيات

يهدف البرنامج إلى إعداد خريجين ذوى كفاءة عالية في مجالات هندسة وتطوير البرمجيات من خلال تقديم التطبيقات العلمية بجانبها النظري والعملي ويقدم القسم في كل فصل دراسي مجموعة من المواد التي تهتم بكافة جوانب تقنية المعلومات كالبرمجة تقنية الوسائط المتعددة, امن البيانات, قواعد البيانات, تصميم صفحات الويب وغيرها من المواد. يهدف هذا البرنامج بالبناء على المهارات والعلوم التى تم التحصل عليها فى السنوات الثلاثة الأولي والتوسع فى طرق التحليل والدراسه والبحث ، واكساب الخريج مهارات جديده متخصصه فى تصميم المواقع وبرمجه وادراة قواعد البيانات وبرمجة قواعد البيانات لصفحات الانترنت، وقد تم تصميم البرنامج ليجعل من الطالب متخصصا فى كافة برمجيات (NET).

يتكون هذا البرنامج من ستة (6) فصول دراسية متخصصة فى مجال هندسة وتطويرالبرمجيات وذلك بعد انهاءالطالب جميع متطلبات السنة الاولى عامة بالكلية ، وتتوج بفصل دراسى أخير يُكمل فيه الطالب العمل الميدانى ومشروع التخرج ليكون مجموع الفصول الدراسيه للطالب فى هدا المسار ثمانية فصول دراسية (أربع سنوات).

المهارات العامة للبرنامج

1. تطوير قدرة الطالب على التحدث والكتابة باللغة الانجليزية وكتابة الرسائل والتقارير العلمية التقنية.
2. القدرةعلى عرض المشاريع وطرح الافكار والتحدث للجمهور.
3. البناء على قدرة الطالب فى التحليل الرياضى والاستنباط والتعلم الذاتى.
4. تمكين المتدربين من المهارات المعرفية والعملية المتضمنة فى مقرراتهم التدريبية.
5. تمكين المتدربين من ممارسة مهارات العمل الحر وانشاء مشاريع صغيرة.
6. اكتشاف وتنمية جوانب الابداع لدى المتدربين وتبنى الافكار الجديدة لديهم.
7. القدرة على البحث فى المشاريع العلمية والتقنية وتوثيقها.
8. تعليم وتاهيل الطلبة لتلبية متطلبات سوق العمل.
9. اعداد الطلبة وتزويدهم بالمهارات التقنية التى تمكنهم من مواكبة التغيرات السريعة فى مجال تقنية المعلومات.
10. التركيز على ان يحصل الطالب على المهارات اللازمة فى هدا التخصص.

المهارات التقنية للبرنامج

ان المناهج الدراسية فى قسم هندسة وتطويرالبرمجيات هى مناهج حديثة تهدف لتمكين الطالب وتوزيده بالمهارات والقدرات العالية ذات الطبيعة التقنية المختلفة وعليه يصبح لدى الطالب المهارات التالية:-

1. الثقة ومهارات تبادل المعلومات.
2. مهارات الاتصال العالية التى يثمنها اصحاب العمل.
3. فرص عمل واسعة اذ يمكن ان يصبح الخريج فى احد مراكز ادارة الحاسوب فى القطاع الحكومى والخاص او
4. شركات البرمجيات.
5. فنيا فى مجال تطوير وصناعة وتركيب معدات واجهزة الحاسب الالى.
6. مسؤلا عن قاعدة البيانات.
7. مطور برامج.
8. المفاهيم النظرية والعملية الأساسية في علم البرمجة من خلال مواد نظم التشغيل ،تحليل وتصميم النظم.

9. من أهم الميزات التي يتمتع بها خريج هذا البرنامج تأهيله للحصول على الشهادات الدولية في مجال برمجة الحاسب الالى منها NET، MCSD ، MOS،MCDAB،MCAD . والتي تعد الحاصل عليها لسوق العمل وتجعل له اولويه في التوظيف لدى القطاعين العام والخاص.

المهارات التقنية المتخصصة للبرنامج:

بالاضافه الى المهارات التى يكتسبها الخريج فى مجال تخصصه (هندسة وتطوير البرمجيات) فان البرنامج ركز على مهارات شخصية وعلى المستوى الذاتى ليتقنها الطالب من خلال مشروع التخرج والعمل الميدانى منها :

1. القدرة على البحث والاستخلاص والتحليل.
2. القدرة على العرض وطرح الافكار بوضوح والعرض المرئى والتوثيق العلمى المنهجى الصحيح.
3. التعرف على سوق العمل واحتياجاته وطرق النجاح فى المقابلات الشخصيه وكتابة السيره الذاتيه.
4. تعلم مهارات العمل ضمن الفريق وتنسيق العمل والانضباط.
5. اكتساب مهارات ادارة المشاريع الصغرى والمتوسطه، الالتزام بالجدول الزمنى، تحديد الموارد، التنبأ بالمعوقات وتحليل نسب المخاطر، المعالجه الفوريه وغيرها.

جدول الوحدات الدراسية المقررة / قسم هندسة وتطوير البرمجيات.

Term 1	Subject	Hours	Prerequisite
IT 100	IT Essentials	3/3	None
IT 111	Fund. of Programming in C	4/0	None
CT 113	Electrical Circuits 1	4/0	None
MA150	Mathematics 1	4/0	None
EN 160	English Language 1	4/0	None
	Total Credit 20	22	

Term2	Subject	Hours	Prerequisite
CT 115	Computer Organ./Architect	4/0	IT 101
IT 112	Programming in Visual C	3/3	IT 111
CT 117	Digital Systems	3/3	None
MA 151	Mathematics 2	4/0	MA 150
EN 161	English Language 2	4/0	EN 160
	Total Credit 20	24	

Term3	Subjects	Hours	Prerequisite
IT 211	Object Oriented Prog. I (C++ / Java)	3/3	IT 112
MA 254	Discrete Math & Structure	4/0	CT 117
IT 214	Introduction to Information System	4/0	None
MA 256	Probability & Statistics	4/0	MA 151
EN 262	English Language 3	4/0	EN 161
	Total Credit 20	22	

Term4	Subjects	Hours	Prerequisite
IT 212	Object Oriented Prog. II (C++ / Java)	3/3	IT 211
IT 216	Data Structure & Algorithms	3/3	IT 112
IT 218	Database Systems Concepts	3/3	IT 214
IT 220	Operating Systems	3/3	CT 115
EN 263	English Language 4	4/0	EN 262
	Total Credit 20	28	

Term5	Subject	Hours	Prerequisite
IT 310	Application Development	3/3	IT 212
IT 312	System Analysis & Design	3/3	IT 218
IT 319	Advanced Database Systems	3/3	IT 218
NT 320	Fundamentals of Networking	3/3	None
EN 364	English Language 5	2/0	EN 263
EN 300	Technical Documentation 1	2/0	EN 263
	Total Credit 20	28	

Term6	Subject	Hours	Prerequisite
IT 314	Human Computer Interaction	4/0	IT 100
IT 316	Multimedia Technology	3/3	IT 100
IT 311	Web Application	3/3	IT 212
NT 318	Internet Security	4/0	NT 320
EN 365	English Language 6	2/0	EN364
EN 301	Technical Documentation 2	2/0	EN 300
	Total Credit 20	24	

Term7	Subject	Hours	Prerequisite
IT 410	Business Process Modeling	3/3	IT 312
IT 412	Fundamentals Of Software Engineering	4/0	IT 312
IT 414	Elective I	3/3	None
IT 470	Project Management.	3/3	None
CT 436	Research Methods	2/0	None
	Total Credit 18	24	

Term8	Subject	Hours	Prerequisite
IT 416	Professional Issue	3/3	None
NT 403	On Field Practice	1/3	None
IT 444	Research Thesis	0/3	All Sub.
	Total Credit 7	13	

Total Credit Units =145

- **Refreshment year (semester 1 & 2) is general for all departments.**
- **Subject Code:**

Subject Code Abbreviations

EN	English Language subjects
MA	Mathematics subjects
IT	Information Technology Dept.
NT	Networking Dept.
CT	Control Dept.

Numbering System

1st digit from left: signifies the year

2nd and 3rd digit from left: for numbering purposes.

الفصل الدراسى الاول

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT 100	IT Essentials	4	3	3	None
IT 111	Fund. of Programming	4	4	0	None
CT 113	Electrical Circuits 1	4	4	0	None
MA150	Mathematics I	4	4	0	None
EN 160	English Language 1	4	4	0	None

Subject	IT Essentials	**Course Code**	**IT 100**	**Theoretical**	3 hrs / wk
Semester	1	**Prerequisite**	None	**Practical**	3 hrs / wk

البرنـــــامج التعلـــيمي	
1. مفـــاهيـــم عـــامة: • الأجهزة والبرامج و تقنية المعلومات • . أساسيات الحاسوب • مكونات الحاسوب. • أداء الحاسوب.	**الأسبوع 2-1**
2. الأجهزة: • وحدة المعالجة المركزية. • الذاكرة. • وحدات الإدخال. • وحدات الإخراج. • وحدات التخزين.	
3. البرامج : • أنواع البرامج. • برامج نظم التشغيل.برامج التطبيقات. • واجهات المستخدم الرسومية. • تطوير النظم.	
4. شبكات المعلومات : • الشبكات المحلية والواسعة. • الإنترانت والإكسترانت. • الإنترنت. • الشبكات الهاتفية.	**الأسبوع 3 - 5**
5. تقنية المعلومات في الحياة اليومية: • الحواسيب في العمل. • العالم الإلكتروني.	
6. الصحة والأمان والبيئة: • التقنية الحيوية. • مسائل صحية.	

	• تحذيرات مسبقة. • سرية المعلومات. • فيروسات الحاسوب. • حقوق النسخ. • الحماية القانونية للبيانات.
الأسبوع 6 - 8	**7. الأنظمة العددية و تحويلاتها:** • النظام العشري. • النظام الثنائي. • النظام الثماني. • النظام السادس عشر. • التحويل ما بين جميع الانظمة.
الأسبوع 9 - 11	**8.البوابات المنطقية:** • AND – OR – NOT – NAND – NOR – XOR XNOR • الشكل المقابل للبوابة. • جدول الصدق. • التعبير المنطقي. • إستخراج التعبير المنطقي من الدائرة المنطقية. • رسم الدائرة المنطقية من التعبير المنطقي. • إعطاء قيم للمدخلات و إيجاد قيم المخرجات
الاسبوع 12- 14	**9. الجزء العملي:** • التعرف على جهاز الحاسوب ومكوناته (System Unit) • التعرف على نظام التشغيل (Microsoft Windows) • التعرف على تطبيق معالج النصوص (Microsoft Word) • التعرف على تطبيق العروض التقديمية (Microsoft PowerPoint)

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

NOTE: Course Work may include assignments, projects and practical activities.

Subject	Fund. of Programming	**Course Code**	IT111	**Theoretical**	4 hrs / wk
Semester	1	**Prerequisite**	None	**Practical**	0 hrs / wk

Program Learning Components

Week 1-2	**1. Programming and Problems Analysis:** • Problems solving using computer. • Steps of problems solving. • Software. • Definition Of Software. • Types of software. • Software development stages. • Data types. • Variables. • Constants. • Reserved words.
Week 3-5	**2. Statements:** • Assign statements. • Decision statements. • Input /output statements. • Control statement. • Loops. • Math Operations. • Relational Operations. • Logical Operations. • String Operations.
Week	**3. Flowchart:**

6-8	• The definition of flowcharts. • The characteristics of flowcharts. • Figures and shapes used in flowcharts: process box, choose box, input, output box. • Algorithms: problem solving using algorithm multiplication or sorting list. • Samples of solved mathematical problems like matrix multiplication or sorting list of names.
Week 9-10	**4. Types Of Flowchart:** • Sequential Flowchart. • Brainchild Flowchart. • Looping Flowchart. • TDMA Of FDMA.
Week 11-12	**5. Looping And Control:** Using of mathematical and logical operation in looping and decision the production of output by executing flowchart.

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

NOTE: Course Work may include assignments, projects and practical activities.

الدوائر الكهربية 1

Subject	Electrical Circuits 1	**Course Code**	CT 113	**Theoretical**	4 hrs / wk
Semester	1	**Prerequisite**	None	**Practical**	0 hrs / wk

Program Learning Components		
Week 1-2	**1. Voltage, Current and Resistance:**	**Resources**
	• Explain Metric system and Electrical units. • Use of Scientific notations and metric prefixes. • Discuss charge, current, voltage and resistance. • Ohm's law and basic calculations. • Explain Power formulas, power supply and voltage drops.	Projector. Simulation using HE© software package.
Week 3	**2. Series Circuits:**	**Resources**
	• Determine total series resistance. • Ohm's law in series circuits. • Adding voltage sources in series. • Apply Kirchhoff's voltage law. • Determine Power in series circuits. • Using voltage dividers.	Projector. Multisim software package.
Week 4	**3. Parallel Circuits**	**Resources**
	• Identify parallel circuit. • Determine total parallel resistance. • Apply Ohm's law in parallel circuits. • Adding current sources in parallel. • Apply Kirchhoff's current law. • Using current dividers. • Determine Power in parallel circuits.	Projector. Multisim software package.

Week 5	**4. Series-Parallel Combination Circuits**	**Resources**
	• Identifying and analyzing the circuits. • Simplifying ladder networks. • Convert voltage source to current source. • Convert current source to voltage source	Projector.
Week	**5. Circuit Analysis Methods**	**Resources**
6-7	• Explain Mesh Analysis (General Approach). • Undertake First-Midterm Test. • Explain Nodal Analysis (General Approach).	Projector. Multisim package.
Week 8-10	**6. Network Theorems**	**Resources**
	• Explain and apply superposition theorem. • Explain and apply The venin's theorem. • Explain and apply Norton's theorem. • Explain maximum power transfer theorem.	Projector. Multisim package.
Week 11-12	**7. Capacitance**	**Resources**
	• Explain the capacitor and type of capacitors. • Determining series and parallel connections. • Charging and discharging of capacitors and current and voltage relationship. • Undertake Second-Midterm Test.	Projector. Multisim package.

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

Textbook: Introductory Circuit Analysis 10th Edition by Boylestad.

Note to student: contact CCTT Library to get a free DVD e-book Code (CT 113).

NOTE: Course Work may include assignments, projects and practical activities.

رياضيــات 1

Subject	Mathematics 1	**Course Code**	MA150	**Theoretical**	4 hrs / wk
Semester	One	**Prerequisite**	None	**Practical**	0 hrs / wk

Program Learning Components	
Week 1-4	**1. Matrices and Determinants**
	• matrices and matrix arithmetic • Types of Matrices • Evaluating Determinants by Row Reduction and Cramer's Rule • Properties of determinants • The adjoins and inverse of a matrix 2x2 , 3x3 • Solution of Homogenous and Non homogenous system of • linear Equations by Gauss Elimination and Cramer's rule
Week 5-7	**2. Vectors:**
	• Introduction to Vectors • Cartesian and Polar Representation • Vector Arithmetic • Dot Product and Projection • Cross Product and Parallel Lines • Properties of vectors • Parametric equations for the Line • Plane equation
Week 8-12	**3. Differentiation**
	• Definition of the Derivative of a function • Geometric meaning of the derivative • Basic differentiation rules • Implicit differentiation • Applying the chain rule

	• Derivatives of Trigonometric functions • Derivatives of logarithmic and exponential functions • Derivatives of Inverse Trigonometric functions • Higher Order Derivatives / L'hopital's Rule

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

NOTE: Course Work may include assignments, projects and practical activities.

Textbooks:

1- Calculus by Anton , Bivens, Davis , 8^{TH} Edition
2- Linear Algebra by Seymour Lipshutz
3- Calculus and Analytical Geometry by Fisher and Ziebur

لغة إنجليزيــة 1

Subject	English language 1	**Course Code**	EN160	**Theoretical**	4 hrs / wk
Semester	One	**Prerequisite**	None	**Practical**	0 hrs / wk

Program Learning Components

Week 1-4	**1. Grammar:** *** NOUNS**: **Functions of nouns **Countable and uncountable nouns ** Plural from nouns **Definite and indefinite articles ***PRONONUNS**: **Subject pronouns **Object pronouns **Possessive pronouns **Possessive adjective **Demonstrative pronouns ***TENSES** **Present simple **present continuos **past simple **Past continuos **future simple

(EACH OF THE TENSES MENTIONED ABOVE SHOULD BE PRESENTED IN THE AFFIRMATIVE, NEGATIVE AND INTERPROGATIVE FROMS.

THE MOST COMMON ADVERBS SHOULD BE PRESENTED WITH EACH TENSES)

***INTERROGATIVES**:

**WHO

**WHOM

**WHAT

**WHEN

**WHERE

**WHOSE

**WHOM

**WHICH

**WHY

**HOW (MANY,MUCH,TALL,…ETC)

***ADIECTIVE :**

** Positions of adjectives

**proper adjectives

**Comparative adjectives

**Superlative adjectives

**Irregular adjectives

***PREPOSITIONS:**

**Prepositions of time

**Prepositions of place

	**Prepositional adjectives
Week 5-7	**2. LCOMPREHENSION:**
	Reading for appreciation : (FOUR OR FIVE SIMPLE AND SHORT PASSGES TAKEN FROM SELECTIONS FOR DEVELOPING READING SKILSS) **Reading for information:** (THREE SIMPLE PASSGES AND DIALOGUES ABOUT THE FIELD OF COMPUTER AND IT'S MOST COMMON TERMS)
Week 8-10	**3. COMPOSITION** :
	STUDENT SHOULD BE TAUGH HWO TO WRITE SIMPLE SENTCENS CONSISTING OF : *NOUN+VERB(subject and predicate of sentence) *NOUN+VERB+NOUN(subject and predicate , object) *NOUN+VERB+NOUN+NOUN (indirect , direct obj) *NOUN+ VERB+ adjective+NOUN *ADJECTIVE+ NOUN +ADJECTIVE+ NOUN *NOUN+ADVERB+VERB *NOUN+ADVERB+VERB+NOUN *NOUN+VERB+ADVERB *NOUN+VERB+NOUN+ADVERB *NOUN+VERB+PREPOSITION+NOUN

	*NOUN+VERB+PREPOSITION+NOUN+ADVERB *VERB+NOUN *ADVERB +VERB+NOUN
Week 11	**4. FUNCTUATION AND SPELING :**
	*Capitalization *Full stop *Question mark *Doubling final consonants *Omission of final (E) *Changing final (y) **(C)=a)(s) **(K) **(TCH)
Week 12	**5. PRONUNCIATION:**
	(MORE CONCENTRATION SHOULD BE GIVEN TO THE SOUNDS WHICH DO NOT OCCUR IN ARABIC LANGUAGE OR LIBYAN DIALOG SUCH AS (P),(V),(TH)..AND THOSE WHICH DO NOT HAVE THE SAME POINT OF ARTICULATION SUCH AS (R), (L)…..)

Course Assessment:

Course Work	Mid-Term Tests	Final Examnation
10	30	60

الفصل الدراسى الثانى

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
CT115	Computer Organ./Architect	4	4	0	IT100
IT112	Programming in Visual C	4	3	3	IT111
CT117	Digital Systems 1	4	3	3	None
MA151	Mathematics 2	4	4	0	MA150
EN161	English Language 2	4	4	0	EN160

تنظيم الحاسبات

Subject	Computer Organ./Architect	**Course Code**	CT115	**Theoretical**	4 hrs / wk
Semester	Two	**Prerequisite**	IT100	**Practical**	0 hrs / wk

Objective: To Provide the opportunity to Understand Structure of Computers to be able to utilize architecture to develop System Program

	Topic	**Description**
Week 1	1. Introduction and Terms. 2. Computer Hardware Units. 3. Computer Software. 4. The Software Development Cycle.	Including The Subject of Computer architecture and organization. General view and Von-Nueman architecture highlighting program tasks and components, software development environment and producing executable machine code.
Week 2	**Topic**	**Description**
	1. Computer Description. 2. Computer main functions and data flow. 3. Performance criteria CISC Computer and Risk Computers. 4. Technology Constraint.	Explaining the architecture versus Organization Structure versus function. The main function of computers. Computer classification into Microcomputer versus Minicomputers and technology constraint for each class.
Week	**Topic**	**Description**

3	1. Central processing unit. 2. The functions the CPU. 3. The role of the control unit in the CPU 4. Internal CPU buss and the external system bus.	The structure of the CPU : ALU , CU , General Register , Special Register and Buses . Introduction the function of the CPU , Then knowing how the CPU synchronizes its functions internally and externally by the control unit and the system bus.
Week 4	**Topic**	**Description**
	1. Case Study: the architecture organization for Intel 8086 microprocessor. 2. Intel 8086 CPU. 3. Intel 8086 Flag Register.	Introduction and analyzing the Intel 8086 CPU architecture: Bus interface Unit BIU, Execution Unit EU and operations Parallelism. Example in assembly how flags are affected by instructions.
Week 5	**Topic**	**Description**
	1. Memory organization and the physical address calculation. 2. Interrupt system in Intel 8086.	How the main memory for 8086 cpu is organized and divided into segments. and how is the address space in mapped into a virtual space with physical address calculation mechanism. Then the student should know the interrupts , vectors and handling.
Week 6	**Topic**	**Description**
	1. Instructions Execution and Sequencing. 2. Machine code programming. 3. Instruction fetching and executing cycle.	Explaining how the CPU executes and instructions from decoding the instruction format and interrupting the meaning of the instruction.

	4. Instruction format.	This is well demonstrated using a sample from machine code programming: Op-code field and operand(s) field.
Week 7	**Topic**	**Description**
	1. Instruction sequencing state diagram. 2. Operations done by the instruction. 3. CPU tasks to complete the execution of an instruction. 4. Place of data to be manipulated.	Following how a CPU completes the execution of an instruction. What stages to follow and what the operations are done by the instruction. Where data can be found to be manipulated as sources of information.
Week 8	**Topic**	**Description**
	1. Immediate addressing mode. 2. Direct and indirect addressing mode. 3. Register and register indirect addressing mode. 4. Displacement and stack addressing mode.	Introduction and analyzing various addressing modes used by most architectures. Examples are taken from addressing modes used by Intel 8086 CPU for real demonstration. Other addressing modes can be easily derived from those mentioned addressing mode.
Week 9	**Topic**	**Description**
	1. Mid Term Exam.	Testing the knowledge gained by students so far.
Week 10	**Topic**	**Description**
	1. Memory hierarchy and performance factors. 2. Semi conductors memory.	Memory organization. Memory as a store for programming and data: RAM, ROM, PROM, EPROM, EEPROM,

	3. Memory cell Structure.	Flash memory, Data line, Control line and select line and the bit storage media.
Week 11	**Topic**	**Description**
	1. Mapping techniques: Direct mapping, set associative mapping and full associative mapping. 2. Replacement strategies: FIFO, LRU, LFU. 3. Write policies: write back write through.	Cash memory organization and management. Example for mapping techniques, replacement strategies and write policies.
Week 12	**Topic**	**Description**
	1. Mechanisms for data input and output. 2. Memory mapped devices and isolated addressed device. 3. Programming and interrupted input/output.	Input and output techniques handling. Introducing the concept of device interface. Highlighting how devices are treated from the software point of view: example for each method.
Week 13	**Topic**	**Description**
	1. Direct memory access (DMA). 2. DMA controller architecture. 3. DMA programming and functions.	Introducing the concept, general structure and comparing and outputting using DMA.
Week 14	**Topic**	**Description**
	1. External buses classifications. 2. PC2 bus structure and operations. 3. ISA and EISA bus structures, attributes and functionality. 4. USB features, structures.	System bus architectures. Introducing and comparing different buses structures.

Course Assessment:

Mid Term	Lap Activities	Final Exam
25%	15%	60%

Text Box and References:

1. "Computer Architecture and Organization" john P.Hayes, 2nd Edition.
2. "The Intel Microprocessor 8086/80286…/Pentium Pro Processor: Architecture Programming and Interfacing" Barry B.Bary, 5th Edition 2000.

البرمجة المرئية بلغة السي

Subject	Programming in Visual C	**Course Code**	IT112	**Theoretical**	3 hrs / wk
Semester	2	**Prerequisite**	IT111	**Practical**	3 hrs / wk

Program Learning Components		
Week 1	**Topic**	**Description and Practical Work**
	1. Basic of C programming. 2. Variables and data Type. 3. Operators and Expressions. 4. Basic input and output statement.	Getting Stated With first step for C programming : The General program structure, variables and abstract data type. Arithmetic and logical Expression. Writing First simple C program.
Week 2	**Topic**	**Description and Practical Work**
	1. Variables declaration. 2. Simple built-in Data types. 3. Constant and their use. 4. Memory allocation and binding for variables and constants.	Understanding the sue of variables and constants for data holding during manipulation. Using constants for fixed data values. Getting knowledge how memory space is allocated for variables holding different data types. The role of declaration statement for memory allocation.
Week 3	**Topic**	**Description and Practical Work**
	1. Decision statement and program control flow selection.	Using the language available selection programming constructs.

	2. The simple **IF** Statement. 3. The tow way **IF…ELSE** Statement. 4. The multi selection.	Conditional selection in different version with one way, tow ways and multiways selections. Intensive examples are to be provided that demonstrate the use and benefits of those constructor.
Week 4	**Topic**	**Description and Practical Work**
	1. Iteration Statements and program compaction. 2. **FOR** Statement as counting loop. 3. **WHILE** statement as pretested loop. 4. **DO...WHILE** statement as post tested loop.	Learning the need for program compaction and eliminating reparations of code parts by building program construct blocks using iteration statements. The difference and usage of those statements are clarified by example during lab activities sessions.
Week 5	**Topic**	**Description and Practical Work**
	1. Function and program decomposition. 2. Types of functions. 3. Parameters passing methods between functions. 4. Standard library functions.	Learning how to split programs into functional unit as subprograms. By this splitting the programmers gain tow benefits: avoiding the reparations of code and reusing modules in more than one program as well as using ready developed modules from system library and other programmers.
Week 6	**Topic**	**Description and Practical Work**
	1. Compound data structures. 2. Arrays. 3. Pointers and addresses. 4. Structures and unions. 5. Enumerators.	Collecting related data into one data structures under one name to ease its access, manipulations memory utilization and speeding up the processing time. Practical activities focuses on how to access the elements of each compound data type and what operations can be performed on it.

	Topic	Description and Practical Work
Week 7	1. String as special arrays of type character. 2. Data inputting and outputting from strings. 3. Handling strings as one unit of data. 4. Library functions for strings.	A string get special attention and treatment in most of modern programming language. The student has to know how VC/VC++ treats string and what library function are available to work with string in word/text processing applications.
Week 8	**Topic**	**Description and Practical Work**
	1. Classes, Objects and inheritance. 2. Overriding, overloading and polymorphism of functions between classes. 3. Interface and abstract classes and the general program prototype.	Adding the related functions for related data types/ structures in one programming unit to form a class. This steps enters the students smoothly into VC++ programming. Function organization between classes is treated by over loading functions in the same class, overriding function between subclasses and polymorphism in different cases in the same hierarchy.
Week 9	**Topic**	**Description and Practical Work**
	1. Mid Term Exam.	Testing the knowledge gained by students so far.
Week 10	**Topic**	**Description and Practical Work**
	1. VC project setting. 2. Massage box Format. 3. Standard controls. 4. Windows messages and notification.	Learning how to start with developing a complete project as an application. Learning the available controls in VC++ to design the graphical user interface GUI.
Week	**Topic**	**Description and Practical Work**

11	1. Continue with controls. 2. Examples. 3. Command line parsing. 4. Mapping and error handling.	Learning how to start with developing a complete project as an application. Learning the available controls in VC++ to design the graphical user interface GUI.
Week 12	**Topic**	**Description and Practical Work**
	1. Files creation. 2. Data inputting from files. 3. Data outputting to files.	Dealing with files: file type, file formats and file attributes. When using text files and when using Binary file. Importing data from files and exporting data to files. Space management in memory and on disks.
Week 13	**Topic**	**Description and Practical Work**
	1. Introduction to applications development. 2. The capabilities of VC++ for windows Applications. 3. What is next of VC++	Tow lab sessions to develop a semi windows application to highlight the capabilities of VC++ to develop interactive windows application.
Week 14	**Topic**	**Description and Practical Work**
	1. General reviw.	Reviewing what have been studied and what is left for applications development using VC++.

Course Assessment:

Mid Term Exam	Home works and Lap Activities	Final lap Exam	Final Exam
15%	25%	20%	40%

Text Box and References:

1. "Microsoft Visual C++" by Julian T.And Andy Olsen 2002.

2. “Programming in C” 5th Edition by ritch and karnighan.

Subject	Digital Systems	**Course Code**	CT117	**Theoretical**	3 hrs / wk
Semester	2	**Prerequisite**	None	**Practical**	3 hrs / wk

Program Learning Components

	1. Understanding the various types of Binary Arithmetic and Boolean algebra. **2. To introduce the concept of basic logic gates.**	**Resources**	**Practical**
Week 1-5	• **To understand the:** Binary arithmetic. Boolean algebra. • **Comprehend fully the concept of:** -basic logic gates. [and, or, not, nand, nor, ex-or, exnor].	-Lesson Plan -Chalk board -Comprehensive workbook of control engineering and systems and data sheets.	To be able to design and Implement combinations of logic circuits.
Week	**3. Introducing Boolean Algebra and minimization** **4. Techniques. Designing combinations of logic circuits.**	**Resources**	**Practical**
6-9	**Comprehension of:** Boolean algebra and its associated theorems. **To understand the**: Logic minimization using Boolean theorems and K-Map	-Lesson Plan. -Chalk board. -Comprehensive workbook of control engineering and	Supervise the laboratory and support students in their practical work.

	To understanding the functional logic unit such as: Encoders, decoders, multiplexers, demultiplexers, Half Adder, Full Adder.....etc	systems and data sheets.	
Week	**5. Understanding and ability to design Sequential circuits and analysis.**	**Resources**	**Practical**
10-14	**To understanding the**: Basic unit of sequential circuits. **Comprehension of the design and analysis process for**: synchronous logic design. Asynchronous counters& registers. *Parallel registers, shift registers *Ripple counter, up – down counter Int. ROM, Ram, Pla, Prom, EPROM.	-Lesson Plan. -Chalk board. -Comprehensive workbook of control engineering and systems and data sheets.	Supervise the laboratory and support students in their practical work.

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

NOTE: Course Work may include assignments, projects and practical activities.

ريـاضـيات 2

Subject	Mathematics 2	**Course Code**	MA151	**Theoretical**	4 hrs / wk
Semester	2	**Prerequisite**	MA150	**Practical**	0 hrs / wk

Program Learning Components	
Week 1-6	**1. Integration**
	Definition of indefinite and definite Integration Properties of Integration Integration by substitution Integrals of Inverse Trigonometric functions Trigonometric substitutions Further Substituting Powers of Trigonometric functions Completing the square Partial Fractions Integration by Parts
Week 10-7	**2. Applications of Integration**
	Area under a curve Area between 2 curve Area under a curve (method Riemann) compute the arc length of a function Numerical Integration (Trapezoidal and Simpsons Rules)

	3. Complex Numbers
Week 14-11	Introduction to complex numbers Cartesian Representation of complex numbers Complex Number Arithmetic Modulus , complex conjugate , Division The Argand Diagram Complex Equations De Moivres theorem Eulers Rule Roots of Complex Numbers

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

Text books:

1. Calculus by Anton, Bivens, Davis, 8th Edition.
2. Liner Algebra by Seymour Lipshutz.
3. Calculus and Analytical Geometry by Fisher and Ziebur.

لغة إنجليزيــة 2

Subject	English language2	**Course Code**	EN161	**Theoretical**	4 hrs / wk
Semester	2	**Prerequisite**	EN160	**Practical**	0 hrs / wk

Program Learning Components	
Week 1-4	**2. Grammar:** * **Tenses** ** Present perfect continuous ** Past perfect continuous ** Future perfect continuous * **If cause** ** Probable conditions ** Improbable conditions ** Impossible conditions * **Gerund** ** As subject ** After prepositions ** The perfect gerund ** The passive gerund * Direct and indirect speech (reported speech)
Week	**6. COMPREHENSION:**

5-7	* Units 8 of (oxford of computing) ***** Using dictionary
Week 8-10	**7. BASIC LOGIC GATES:** * The mechanics of composition ** Methods of starting ** Continuity and paragraphing ** Methods if ending ** Somme types of composition ** Language and style * Spelling and pronunciation ** (ce , ci , ti) before a vowel have the sound of (sh) as in cetaceans , gracious , motion , partial ** (si) after an accented vowel , is pronounced like (zh) confusion * Summarizing ** Paragraphs ** Letters
Week 11-12	**8. SPELLING AND PRONUNATION** **Students are given the must common words which have pronunciation but Different spelling such as :** ACCEPT / EXERT ANT/AUNT BREAK/BRAKE CHEQUE/ CHECK CRITIC / CRITIQUE CURRENT / CURR COMPLEMENT/COMPLEMENT CUE/QUEUE DRAFT/DRAUGHTDEAR/DEER HOLE / WHOLEHEAR/ HERE HIRE/HIGHER MAIL/ MALEPEACE/PIECE QUIFT /

	QUITERIGHT / WRITE PRECED / PROCEED PREPOSITION / PROPOSITION TALL/TALE WAIT/ WEIGHTWAY/WEIGH WEEK / WEAK THEIR / THEREKNEW/ NEW READ/RED
Week 13-14	**9. NUMBER REPRESENTATION**
	Students are given the most common abbreviations more, concentration on those which are related computer science such as : * GRAMMAR ** N. NOUN ** SING SINGULAR ** PRON.PRONOUN ** PL.PLURAL ** V.VERB ** SYN. SYNONYM ** ADV ADVERB ** ANT.ANTONYM ** ADJ. ADJECTIVE ** PUNCT.PUNCTUATION ** PREP.PREPOSITION ** MUSC. MUSCULINI ** CONJ. CONJUNCTION ** FEM.FEMININE * TITLES OF PERSONS ** DR. DOCTOR ** MR. MISTER ** MRS. MISTER'S ** PROF. PRFESSOR

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical
10	30	60

الفصل الدراسى الثالث

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT211	Object Oriented Prog 1 (C++ / Java)	4	3	3	IT112
IT214	Introduction to Information System	4	4	0	None
MA254	Discrete Math & Structure	4	4	0	CT117
MA256	Probability & Statistics	4	4	0	MA151
EN262	English Language 3	4	4	0	EN161

البرمجة الشيئية 1 (C++ / Java)

Subject	Object Oriented Prog. I (C++ / Java)	**Course Code**	IT211	**Theoretical**	3 hrs / wk
Semester	Three	**Prerequisite**	IT112	**Practical**	3 hrs / wk

الاهداف العامة للبرنامج التعليمى

- تعليم المتدرب أسس و مفاهيم النظم الهدفية.
- تعليم المتدرب على كيفية تكوين برامج وتطبيقات بلغة الجافا بإستخدام الأسلوب الهدفي.

Week 1

1. Feature of object oriented programming language

تعليم المتدرب المبادى العامة للاسلوب الهدفى فى البرمجة مثل الوراثة والتعددية واخفاء البيانات بالاضافة الى مكونات النظم الهدفية (Objects & classes) والفروقات الاساسية بين الاسلوب التقليدى والهدفى .

Practical	Specific Learning Outcomes
• التعرف على دورة حياة البرنامج فى لغة جافا . • التعرف على بيئة تشغيل جافا الافتراضية (JVM). • التعرف على بيئة التطوير الاساسية فى **جافا** ومكوناتها(JDK)	• المقدرة على فهم مبادئ الاسلوب الهدفى فى البرمجة • القدرة على التمييز بين المكونة (object) والفصيل (class) • التمييز بين الاسلوب التقليدى والهدفى • فهم مبادئ الوراثة (Inheritance) والتعددية (Plymorphism) والكبسلة (Encypsulation) والتوصيف (Abstraction)وتطبيقاتها العملية

Week 2

2. JAVA programming Environment

تعليم المتدرب مزايا لغة جافا عن اللغات الاخرى

تعليم المتدرب التركيبة العامة للبرنامج فى لغة جافا (Java Program Structure)

	) فى لغة جافاJava Lexical Elementsتعليم المتدرب التركيبة المعجمية ( ) Variables, Literals, Operators,Expressionsتعليم المتدرب بكيفية تحديد المعرفات والتعابير بأنواعها ( ) Java data typesتعليم المتدرب الانواع البيانية فى جافا بأنواعها (	
	Specific Learning Outcomes	**Practical**
	• التمييز بين امكانيات لغة جافا واللغات التقليدية الاخرى. • معرفة تركيبة البرنامج فى جافا • معرفة التركيبة المعجمية فى جافا • معرفة التعابير (Expressions) والمعرفات (Identfiers) فى جافا بأنواعها. • معرفة الانواع البيانية (**Java data types**) فى جافا. • المقدرة على كتابة برنامج بسيط فى جافا.	• التعرف على بيئة التطوير (IDE) وكيفية التعامل معها . • كتابة بعض البرامج البسيطة فى جافا.
Week 3	**3. Programming Constructors of JAVA** تعليم المتدرب تراكيب التحكم الاساسية للبرنامج فى جافا (Iteration\Selection \Sequence) بالاضافة الى جمل الاختيار المفرد (IF) والمتعدد (Switch statement.) تطبيق امثلة متعددة عن التراكيب السابقة	
	Specific Learning Outcomes	**Practical**
	• المقدرة على تصميم خوارزميات بأستخدام تراكيب التحكم فى جافا فى حل بعض المسائل البرمجية التقليدية. • المقدرة على كتابة برنامج بأستخدام التراكيب السابقة	• كتابة بعض البرامج بأستخدام تراكيب التحكم فى جافا .
Week	**4. Java IO operations**	

<table>
<tr><td>4</td><td colspan="2">تعليم المتدرب مفاهيم عمليات الادخال والاخراج فى جافا وكيفية استخدام مكتبة جافا للادخال والاخراج (java.io.*) والفصائل التابعة لها .</td></tr>
<tr><td rowspan="2"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على استخدام استخدام الفصائل الخاصة بالادخال والاخراج (System / InputStreamReader /bufferedReader)فى التطبيقات المختلفة
• المقدرة على استخدام دوال الادخال والاخراج المختلفة.</td><td>• كتابة بعض البرامج التى تحتوى على جمل مختلفة للادخال والاخراج</td></tr>
<tr><td>Week
5</td><td colspan="2">5. Arrays & Strings
تعليم المتدرب المبادئ العامة للمصفوفات واستخداماتها .
تعليم المتدرب كيفية تكوين المصفوفات بأنواعها المختلفة (Object &Data type Primative) وكيفية التعامل معها .
تعليم المتدرب كيفية انشاء السلاسل (Strings) واجراء عمليات مختلفة عليها .
تعليم المتدرب كيفية تحويل الانواع البيانية المختلفة (Casting)</td></tr>
<tr><td rowspan="2"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على استخدام المصفوفات والسلاسل فى بعض التطبيقات العملية .
• المقدرة على اجراء عمليات التحويل بين الانواع البيانية المختلفة</td><td>• كتابة برامج لحل بعض التطبيقات الخاصة بالمصفوفات والسلاسل . مع اجراء بعض التحويلات البيانية فى تلك التطبيقات.</td></tr>
<tr><td>Week
6</td><td colspan="2">6. Methods
تعليم المتدرب كيفية انشاء الدوال بأنواعها المختلفة .
فهم كيفية استدعاء الدوال (Methods) وكيفية تمرير المعاملات (Passing arguments)</td></tr>
<tr><td rowspan="2"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على تكوين دوال (Methods) بأنواعها المختلفة واستدعائها وتمرير المعاملات لها.</td><td>• كتابة دوال بمعاملات مختلفة واستدعائها.</td></tr>
</table>

<table>
<tr><td rowspan="3">Week
7</td><td colspan="2">7. Access Specifiers
تعليم المتدرب مبادئ واسس استخدام محددات الوصول (Access Specifiers) وانواعها
Public – Protected - Private
تعليم المتدرب كيفية تكوين الحزم (Packages) وكيفية اضافة الفصائل لغرض تكوين التطبيقات.</td></tr>
<tr><td>Practical</td><td>Specific Learning Outcomes</td></tr>
<tr><td>• كتابة برامج تحتوى على دوال وخصائص بمحددات وصول مختلفة والتعامل معها.
• تكوين بعض الحزم واستدعائها</td><td>• المقدرة على فهم الانواع المختلفة للمحدادت ومستويات الوصول الخاصة بها .
• المقدرة على (تكوين / استدعاء) الحزم</td></tr>
<tr><td rowspan="3">Week
8</td><td colspan="2">8. Polymorphism
تعليم المتدرب مبادئ التعددية (Polymorphism) والغرض منها.
تعليم المتدرب كيفية انشاء دوال بتحميل زائد (Method Overloading) .
تعليم المتدرب الغرض من دوال البناء (Constructors) وكيفية تكوينها وكيفية تكوين اكثر من دالة بناء بتحميل زائد (Constructor overloading)</td></tr>
<tr><td>Practical</td><td>Specific Learning Outcomes</td></tr>
<tr><td>• اجراء تطبيقات مختلفة على التعددية عن طريق تكوين فصيل يحتوى على مجموعة من الدوال بنفس الاسم وبمعاملات مختلفة .</td><td>• المقدرة على تطبيق مفهوم التعددية عن طريق التحميل الزائد .
• المقدرة على تكوين اكثر من دالة بناء فى الفصيل</td></tr>
<tr><td rowspan="3">Week
9</td><td colspan="2">9. Inheritance
تعليم المتدرب مبادئ الوراثة (Inheritance) وانواعها والغرض منها وكيفية الاستفادة منها لتطبيق مفهوم اعادة استخدام البرمجيات (Software reuse) .
تعليم المتدرب كيفية استخدام المحدد (protected) فى هرميات الوراثة.</td></tr>
<tr><td>Practical</td><td>Specific Learning Outcomes</td></tr>
<tr><td>• تكوين بعض التطبيقات بحيث تحتوى على</td><td>• المقدرة على تكوين هرمية وراثة بأستخدام</td></tr>
</table>

	(extends) • المقدرة على استخدام محدد (Protected) فى هرميات الوراثة.	هرميات وراثة وانشاء مكونات (Objects) من خلالها.
Week 10	**10.Overriding**) فى تطبيق مفهوم التعددية **overriding**تعليم المتدرب كيفية استخدام ميزة افضلية الطرق ((Polymorphism)**SUPER**.( ) فى هرميات الوراثة بأستخدام (**Overriding Constructors**.( )تعليم المتدرب كيفية استخدام افضلية الطرق مع دوال البناء (	
	Specific Learning Outcomes	**Practical**
	• المقدرة على فهم ميزة افضلية الطرق والفائدة منها. • المقدرة على استخدام (SUPER) فى استدعاء الدوال فى الفصيل الاعلى . • المقدرة على تطبيق الافضلية مع دوال البناء	• تكوين بعض التطبيقات التى تحتوى على هرمية وراثة وتطبيق مفهوم الافضلية فى استدعاء الدوال من خلالها.
Week 11	**11.Developing Integrated applications** تمكين المتدرب من تكوين تطبيق متكامل متعدد الفصائل والدوال بلغة جافا خطوة بخطوة بحيث يحتوى على مجموعة من المفاهيم السابق دراستها : (Casting/ Inhertance / Arrays/ overriding/ overloading/ Package) تمكين المتدرب من تتبع (trace) الايعازات فى التطبيق .	
	Specific Learning Outcomes	**Practical**
	• المقدرة على تطبيق مفاهيم البرمجة الهدفية فى تطبيق متكامل • القدرة على تتبع واصلاح الاخطاء فى التطبيق .	• تنفيذ التطبيق المتكامل عمليا . • اجراء بعض الاضافات على التطبيق
Week 12	**12. Review** تمكين المتدرب من اجراء مراجعة عامة لجميع المفاهيم السابق دراستها عن طريق مجموعة من الامثلة.	

	Specific Learning Outcomes	Practical
	-	• تنفيذ بعض البرامج لغرض مراجعة المفاهيم السابقة

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
20	20	20	40

مقدمة لنظم المعلوماتية

Subject	Introduction to Information System	**Course Code**	IT214	**Theoretical**	4 hrs / wk
Semester	Three	**Prerequisite**	None	**Practical**	0 hrs / wk

ر.ت	الموضوع	الأهداف
1	**التعريف بالنظام ومكوناته و انواع النظام.**	1. تعريف النظام System. 2. مكونات النظام System Components. 3. خصائص النظام. 4. أنواع النظام.
2	**البيانات والمعلومات و المعرفة وخصائص المعلومات المطلوبة.**	1. ماهية البيانات و خصائصها. 2. التعرف على المعلومات و خصائص المعلومات المطلوبة. 3. كيفية معالجة المعلومات و دور الحاسوب في هذه العملية. 4. المعرفة وأهميتها و كيفية إستخلاصها وانواعها.

3	**نظم المعلومات المحوسبة و علاقتها بالمنظمات.**	1. تعريف نظام المعلومات المعتمد على الحاسوب و ماهي مكوناته. 2. تعريف المنظمة و وظائفها الرئيسية. 3. الأبعاد الرئيسية لنظم المعلومات في المنظمات 4. العلاقة التبادلية بين نظم المعلومات والمنظمات. 5. أنواع نظم المعلومات في المنظمة.
4	**نظم معلومات المعاملات و نظم المعلومات الإدارية.**	1. التعرف على نظم معالجة المعاملات Transaction Processing System. 2. ما هي وظائفه ومكوناته و أهميته إلى المنظمات. 3. نظم المعلومات الإدارية Information Management System. 4. مكوناتها وأهميتها إلى المنظمات. 5. أنواع التقارير والمخرجات المقدمة MIS إلى المنظمات.
5	**نظم دعم القرار.**	1. أنواع القرارات مراحل عملية إتخاذ القرار. 2. مكونات نظام دعم القرار و وظائفه. 3. أهمية التحليل الفوري للبيانات OLAP. 4. التنقيب عن البيانات (Data Mining). 5. الفروق بين نظام دعم القرار ونظم المعلومات الإدارية. 6. أنواع نظم دع القرار.
6	**الذكاء الإصطناعي.**	1. تعريف الذكاء الإصطناعي وأهم تطبيقاته. 2. النظام الخبير ومكوناته Component of Expert System. 3. ماهية قاعدة المعرفة Knowledge Base. 4. أهم موارد البرمجيات المستخدمة Software Recourse. 5. خبير المجال Domain Expert و أهميته في عملية تطوير نظام الخبير من قبل مهندس المعرفة Knowledge Engineer.
7	**نظم دعم الإدارة العليا ونظم أتمتة المكاتب.**	1. نظم الإدارة العليا Executive Support Systems. 2. آلية العمل على نظم الإدارة العيا و دعمها لعملية إتخاذ القرارات على المستوى الإستراتيجي.

		3. مصادر معلومات نظم دعم المدراء الإستراتجيين. 4. العلاقة المتبادلة بين الأنظمة الاربعة DSS, MIS, TPS, ESS. 5. التعرف بنظم أتمتة المكاتب وأهميتها للممنظمة. 6. مستخدمي نظم أتمتة المكاتب End User of AOS 7. تطبيقات نظم أتمتة المكاتب والمكاسب المقدمة من قبل هذه النظم.
8	**نظم المعلومات الوظيفية و نظم المعلومات المتكاملة**	1. أهم نظم المعلومات الوظيفية المستخدمة في المنظمة. 2. نظم معلومات تخطيط موارد المنظمة Enterprise Resource Planning.
9	**عملية إمتلاك و تطوير نظم المعلوامات.**	1. مشاريع تطوير نظم المعلومات في المنظمات. 2. مراحل عملية التطوير و الخطوات و الانشطة المتبعة لتطوير نظم المعلومات المحوسبة.
10	**المنهجيات والادوات و التقنيات المستخدمة في عملية التطوير.**	1. أهم المنهجيات المستخدمة لتطوير نظم المعلومات. 2. أبرز التقنيات و الأدوات التي يستخدمها محلل النظم في تحليل و تصميم النظام 3. أدوات تطوير البرمجيا المتكاملة Case Tools.
11	**إدارة المصادر بيانات و المعلومات في نظم المعلومات.**	1. إدارة مصادر البيانات قواعد البيانات. 2. مراحل تطوير قاعدة البيانات. 3. معمارية نظام إدارة قاعدة البيانات. 4. نظم إدارة قواعد البيانات و أنواعها و أهميتها في نظم المعلومات المحوسبة.
12	**أمن المعلومات**	1. الأخطار التي يمكن أن تتعرض لها انظمة المعلومات المعتمدة على الحاسب. 2. الحماية من الأخطار. 3. العناصر الأساسية لنظام الأمن المعلوماتي. 4. بعض المشاكل المعاصرة التي تواجه أمن أنظمة المعلومات. 5. المخاطر التي تهدد خصوصية المعلومات في العصر الرقمي.

رياضيات منفصلة

Subject	Discrete Math & Structure	**Course Code**	MA254	**Theoretical**	4 hrs / wk
Semester	Three	**Prerequisite**	CT117	**Practical**	0 hrs / wk

Objective: To Provide the opportunity to understand and be able use fundamental concepts in discrete mathematics and to increase students thinking and ability for using predicate calculus to solve real computer problems.

Week 1	**Topic**	**Description**
	1. Course Overview. 2. Propositional Logic	An introduction to counting enumeration and matrices. The need for propositional logic in problem solving.
Week 2	**Topic**	**Description**
	1. Predicate logic.	Explaining the role of predicate logic for best solutions of given problems.
Week 3	**Topic**	**Description**
	1. Interference rules and proofs.	Knowing the roles of interference and steps for proofing an opposition in prediction methods.
Week 4	**Topic**	**Description**
	1. Interference rules and proofs.	Cont. Knowing the roles of interference and steps for proofing an opposition in prediction methods.
Week	**Topic**	**Description**

5	1. Interference rules and proofs.	Cont. Knowing the roles of interference and steps for proofing an opposition in prediction methods.
Week 6	**Topic**	**Description**
	1. Mathematical logic.	Encapsulating the relations between informal introduction, propositional calculus, formal proofs, methods proofs.
Week 7	**Topic**	**Description**
	5. Sets and its operations.	Introducing some special sets and its operations, subscripting and indexing on sets.
Week 8	**Topic**	**Description**
	5. Sets and cardinality.	Partial ordered set, relations, properties.
Week 9	**Topic**	**Description**
	2. Mid Term Exam.	Theoretical with weight 25% covers the topics taught so far.
Week 10	**Topic**	**Description**
	4. Functions.	Functions and their compositions, recursive definitions and applications.
Week 11	**Topic**	**Description**
	4. Summations and sequences.	Sequences and big notation.
Week 12	**Topic**	**Description**
	4. Algorithms and the growth of functions.	Binary operations and properties, some algebraic systems, maximum and minimum value of function.

Week 13	Topic	Description
	4. Divisibility and modular arithmetic.	Primes and greatest common divisors.

Week 14	Topic	Description
	5. Mathematical induction.	Mathematical induction, well ordering, strong induction, recursive definitions and algorithm.

Course Assessment:

Mid Term	Home work and course Activities	Final Exam
25%	25%	50%

Text Box and References:

1. Discrete Mathematics and its Applications, 7th Edition by Kenneth H.Rosen
2. Discrete and Combinatorial Mathematics, 2th Editon by R.P Grimaldi

Subject	Probability & Statistics	**Course Code**	MA256	**Theoretical**	4 hrs / wk
Semester	Three	**Prerequisite**	MA151	**Practical**	0 hrs / wk

General Objective

- To Give the Students an understanding of statistics.
- To learn some commonly used statistical techniques.
- To apply these techniques in describing and analyzing data.
- To use statistical to solve different kind of problems.
- To recognize sound/good statistical studies.
- How to use statistical applications on the computer.

Week 1	**Specific Learning Outcomes**	**Resources**
	• What is statistic?	
Week 2	**Specific Learning Outcomes**	**Resources**
	• Collecting data, graphical presentation and tabulation.	
Week 3	**Specific Learning Outcomes**	**Resources**
	• Measures of central tendency: mean, median, and mode.	
Week 4	**Specific Learning Outcomes**	**Resources**
	• Measures of description: range, and standard deviation. • Relative dispersion and skewness.	

Week 5	**Specific Learning Outcomes**	**Resources**
	• Elementary probability: random experiment, sample space,event.	
Week 6	**Specific Learning Outcomes**	**Resources**
	• Computation of probability rules of addition and multiplication.	
Week 7	**Specific Learning Outcomes**	**Resources**
	• Mid- term test 1.	
Week 8	**Specific Learning Outcomes**	**Resources**
	• Conditional of probability.	
Week 9	**Specific Learning Outcomes**	**Resources**
	• Independence.	
Week 10	**Specific Learning Outcomes**	**Resources**
	• Random variables, probability distributions, variance and expected value.	
Week 11	**Specific Learning Outcomes**	**Resources**
	• Some probability distribution (Binomial, Poisson, and Normal)	
Week 12	**Specific Learning Outcomes**	**Resources**
	• Simple liner correlation: Pearson's correlation Coefficient and spearman's rank correlation coefficient.	

Week 13	Specific Learning Outcomes	Resources
	• Simple liner regression.	
Week 14	**Specific Learning Outcomes**	**Resources**
	• Mid-Term test 2	

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

Text books:

Statistics and probability, theory and practice

لغة إنجليزيــة 3

Subject	English language 3	**Course Code**	EN262	**Theoretical**	4 hrs / wk
Semester	Three	**Prerequisite**	EN161	**Practical**	0 hrs / wk

Program Learning Components

Week 1-5	**3. Grammar:** * **Tense** ** Present perfect continuous ** Past perfect continuous ** Future perfect continuous *** If clause** ** Probable conditions ** Improbable conditions ** Impossible conditions *** Gerund** ** As subject ** After prepositions ** The perfect gerund ** The passive gerund ** Direct and indirect speech (reported speech)
Week	**10. COMPREHENSION:**

6-10	* 8 units of (oxford of computing) * Using dictionary
	11. BASIC LOGIC GATES:
Week 11-14	*** The mechanics of composition** ** Methods of starting ** Continuity and paragraphing ** Methods of ending ** Somme types of composition ** Language and style *** Spelling and pronunciation** ** (ce,ci,ti) before a vowel have the sound of (sh) as in cetaceans ,gracious ,motion,partial ** (si) after an accented vowel , is pronounced like (zh) confusion ** When (ci,ti)precede similar combination as in Pronunciation negotiation ** (h) after (r) has no sound as in rhyme ** (W) before (r) is silent as in write , wrong ** (P) before (s) is mute as in psychology

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical
10	30	60

الفصل الدراسى الرابع

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT212	Object Oriented Prog. 2 (C++ / Java)	4	3	3	IT211
IT216	Data Structure & Algorithms	4	3	3	IT112
IT218	Database Systems Concepts	4	3	3	IT214
IT220	Operating Systems	4	3	3	CT115
EN263	English Language 4	4	4	0	EN262

البرمجة الشيئية 2 (C++/ Java)

Subject	Object Oriented Prog. II(C++ / Java)	**Course Code**	IT212	**Theoretical**	3 hrs / wk
Semester	Four	**Prerequisite**	IT211	**Practical**	3 hrs / wk

الأهداف العامة للبرنامج التعليمى

- تعليم المتدرب كيفية إنشاء وتكوين التطبيقات الهدفية .
- تعليم المتدرب كيفية إنشاء تراكيب البيانات المختلفة فى جافا وكيفية التعامل مع الملفات .
- تعليم المتدرب كيفية التعامل مع الواجهات الرسومية (**GUI**) ومكوناتها بأسلوب البرمجة الموجهة نحو الحدث (**Event Driven programming style**)
- تعليم المتدرب كيفية انشاء تطبيقات جافا بأسلوب البرمجة المتزامنة (**Concurrent Programming**) .
- تعليم المتدرب كيفية التعامل مع قواعد البيانات فى جافا .
- تعليم المتدرب كيفية انشاء تطبيقات صفحات جافا (**Applets**) .

Week 1	**1. Java Main Features (Revision)** اجراء مراجعة عامة وشاملة لما سبق دراسته عن طريق بعض الامثلة لمفاهيم الوراثة , التعددية واخفاء البيانات فى جافا	
	Specific Learning Outcomes	**Practical**
	• المقدرة على كتابة تطبيقات متكاملة بأستخدام المفاهيم السابقة .	• تطبيق بعض الامثلة العملية على المفاهيم السابق ذكرها.
Week	**2. Using and implementing Data Structures in java**	

<table>
<tr><td>2</td><td colspan="2">تعليم وتمكين المتدرب من فهم التراكيب البيانية المختلفة فى لغة جافا وكيفية انشائها واستخدامها فى التطبيقات المختلفة .</td></tr>
<tr><td rowspan="2"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على تكوين التراكيب البيانية المختلفة مثل (lists, stack , queues , tress)
• المقدرة على تطبيق واستخدام التراكيب السابقة لحل بعض المسائل البرمجية</td><td>• كتابة بعض البرامج بأستخدام تراكيب البيانات السابقة</td></tr>
<tr><td rowspan="3">Week
3</td><td colspan="2">3. INPUT/OUTPUT STREAMSand Files
تعليم المتدرب مفاهيم عمليات الادخال والاخراج فى جافا وكيفية استخدام مكتبة جافا للادخال والاخراج (java.io.*) والفصائل التابعة لها .</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على استخدام الفصائل الخاصة بالادخال والاخراج (InputStreamReader/bufferedReader)فى التطبيقات المختلفة.
• المقدرة على استخدام دوال الادخال والاخراج المختلفة.
• المقدرة على التعامل مع الملفات (القراءة والكتابة)</td><td>• كتابة بعض البرامج التى تحتوى على جمل مختلفة للادخال والاخراج .
• كتابة بعض البرامج التى تتعامل مع الملفات .</td></tr>
<tr><td>Week
4</td><td colspan="2">4. EXCEPTION HANDLING
تعليم المتدرب المبادئ العامة لكيفية التعامل مع الحالات الاستثنائية (Exceptions) فى جافا وكيفية معالجة اخطاء وقت التشغيل (run time errors)</td></tr>
</table>

	Specific Learning Outcomes	**Practical**
	• المقدرة على تعريف الهيكل العام للحالات الاستثنائية عن طريق استخدام (try , catch & finally) • المقدرة على اختبار ومعالجة الحالات الاستثنائية فى التطبيق (throwing exeptions).	• كتابة برامج تحتوى على مجموعة من الحالات الاستثنائية ومعالجتها .
Week 5	**5. GUI programming with AWT/Swing** تعليم المتدرب المفاهيم والمبادئ الاساسية لكيفية استخدام المكتبات الرسومية (AWT , Swing) ومكوناتها فى انشاء واجهات رسومية (GUI) .	
	Specific Learning Outcomes	**Practical**
	• المقدرة على التعرف على المكونات الرسومية المختلفة مثل (frames , windows , buttons , labels...) وكيفية انشائها وتغيير خصائصها . • المقدرة على انشاء واجهات مستخدم (GUI) بأستخدام المكونات السابق ذكرها .	• انشاء بعض التطبيقات الرسومية وتغيير خصائص مكوناتها ..
Week 6	**6. Event-driven programming** تعليم المتدرب مفاهيم البرمجة الموجهة نحو الحدث (mingevent driven prgram) وانواع الاحداث الخاصة بالمكونات الرسومية .	
	Specific Learning Outcomes	**Practical**

	• المقدرة على فهم واستيعاب مبادئ البرمجة الموجهة نحو الحدث (event driven programming). • المقدرة على التعامل مع مكونات البرمجة الموجهة نحو الحدث (events , listeners , layout managers).	• كتابة برامج تحتوى على واجهات رسومية مختلفة واضافة المكونات بالتعرف على الحدث (listeners) والتعامل معها
Week 7	**7. Event handling in Java** تعليم المتدرب كيفية انشاء المكونات الخاصة بالاحداث وكيفية الاستجابة لها باستخدام (event handler) بالاضافة الى كيفية اضافة مستمع الحدث (event listener) الى المكونات الرسومية المختلفة .	
	Specific Learning Outcomes	**Practical**
	• المقدرة على معالجة الاحداث (events) المختلفة والخاصة بالمكونات الرسومية المختلفة مثل الازرار , القوائم , النوافذ والاطارات .	• كتابة برامج تحتوى على واجهات رسومية مختلفة (GUI) واضافة الاحداث المختلفة ومعالجتها.
Week 8	**8. Java Applets** تتمكين المتدرب من فهم تطبيقات ابلت (**Java applet**) , مزاياها , دورة حياتها واستخداماتها	
	Specific Learning Outcomes	**Practical**
	• المقدرة على فهم دورة الحياة الخاصة بتطبيق جافا ابلت (**java applet life cycle**) . • المقدرة على فهم دوال تطبيقات جافا ابلت المختلفة (**init , print , start , stop , destroy**) • المقدرة على تكوين تطبيقات ابلت للاغراض المختلفة (الرسم – **paint** , عرض النصوص –	• تكوين بعض تطبيقات ابلت لغرض رسم الاشكال الهندسية المختلفة وتغيير خصائصها . • تكوين تطبيق ابلت لغرض التعامل مع النصوص والمكونات الرسومية المختلفة

	drawing strings , اضافة المكونات الرسومية المختلفة). • المقدرة على اضافة تطبيقات ابلت الى صفحات **HTML**.	
Week 9	**9. Concurrent programming concepts.** تعليم المتدرب المفاهيم الاساسية للبرمجة المتزامنة (Concurrent programming) ومزاياها وتطبيقاتها المختلفة	
	Specific Learning Outcomes	**Practical**
	• المقدرة على كتابة برامج بسيطة تحتوى على مسارات تزامنية (threads) وتفعيلها	• تكوين بعض التطبيقات بحيث تحتوى على مسارات تزامنية (threads) وتنفيذ البرنامج وتتبع الناتج من التنفيذ.
Week 10	**10. Concurrent Programming in Java** تعليم المتدرب كيفية اجراء تطبيقات عملية مختلفة بأستخدام اسلوب البرمجة المتزامنة .	
	Specific Learning Outcomes	**Practical**
	• المقدرة على كتابة تطبيقات عملية بالاسلوب المتزامن تحتوى على مسارات تزامنية (threads) وتستخدام الواجهة (runnable) ودوال (notify & wait) فى عمليات المزامنة. • المقدرة على تنظيم المسارات وادارتها (thread sheduling & managment)	• تكوين بعض التطبيقات المختلفة باسلوب البرمجة المتزامنة
Week	**11. Accessing the Database with JDBC** تعليم المتدرب كيفية انشاء تطبيقات جافا يمكن من خلالها التعامل مع قواعد البيانات واجراء	

<table>
<tr><td>11</td><td colspan="2">العمليات المختلفة عليها .</td></tr>
<tr><td rowspan="3"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على كتابة وتضمين ايعازات لغة الاستفسارات (SQL statement) باستخدام خاصية الربط مع محركات قواعد البيانات فى جافا (JDBC) .
• المقدرة على تعريف مشغل قواعد البيانات (Registring Driver) للانواع المختلفة من محركات قواعد البيانات . بالاضافة الى كيفية اجراء الاتصال بقاعدة البيانات (Connecting with database)
• المقدرة على تنفيذ ايعازات لغة الاستفسارات (Executing a SQL statement) داخل تطبيقات جافا لغرض استرجاع وتحديث البيانات</td><td>• تكوين بعض التطبيقات المختلفة لغرض الربط مع قواعد البيانت .
• اجراء عمليات استرجاع وتحديث البيانات من خلال التطبيق</td></tr>
<tr><td>Week
12</td><td colspan="2">12. JAVA Selected Topics
تمكين المتدرب من استيعاب الخصائص والمزايا والامكانيات الاضافية والتى لم يتم استعراضها خلال المنهج والتى يختارها استاذ المادة .
مثال : servlets , java collections , JSP , ...</td></tr>
<tr><td rowspan="2"></td><td>Specific Learning Outcomes</td><td>Practical</td></tr>
<tr><td>• المقدرة على فهم المزايا والامكانيات المختلفة</td><td>• تنفيذ بعض التطبيقات المتعلقة بالمزايا والخصائص السابق ذكرها .</td></tr>
<tr><td>Week</td><td colspan="2">13. Review
تمكين المتدرب من اجراء مراجعة عامة لجميع المفاهيم السابق دراستها عن طريق مجموعة من</td></tr>
</table>

13	الامثلة.	
	Specific Learning Outcomes	**Practical**
	-	تنفيذ بعض البرامج لغرض مراجعة المفاهيم السابقة

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
20	20	20	40

Subject	Data Structure & Algorithms	**Course Code**	IT216	**Theoretical**	3 hrs / wk
Semester	Four	**Prerequisite**	IT112	**Practical**	3 hrs / wk

General Objective

This course focuses on how to store data in your computer (data structure) and how to efficiently manipulate these data (algorithm analysis). Students will learn basic concepts and principles of various abstract data types. File structures, and algorithm analysis techniques., and will gain practical experience and programming skils through course projects

1- Introducting data structure fundamentals

2- Reviewing C++ and introducing Algorithm analysis

3- Introducing abstract data types

4- Describing Graph Algorithms concepts

5- Introducing trees concepts

6- Understanding Sorting Techniques

7- Understanding Searching Techniques

8- Describing Graph Algorithms concepts

Program Learning Components

	Specific Learning Outcomes	Resources	Practical
Week 1	1. **Introducing data structure fundamentals:** To be able to Describe data strucure fundamentals: - Elementary Data Strucures - Trees	Capability to project the data strucure fundamentals A comprehensive workbook of data strucure fundamentals	

	- Recursion		
Week 2	**Specific Learning Outcomes**	**Resources**	**Practical**
	2. **Reviewing a high level language such as C , C++, or java and introducing Algorithm analysis** To be able to understand a choosen programming language code To be able to describe: - Alqorithm analysis - Running time calculation	Capability to project programming language Features, Algorithm analysis Explaining	
Week 3	**Specific Learning Outcomes**	**Resources**	**Practical**
	3. **Introducing abstract data types** To be able to describe: lists Simplest data structure (array) Advantages and disadvantages Insertion and deletion elements to/from a ordered list Used static data structure		Writing programs : Store data in array Retrieve data from array
Week 4	**Specific Learning Outcomes**	**Resources**	**Practical**
	Dynamic data structure linked lists single/double Implemented with pointers Advantage and disadvantage Insertion / deletion element		Writing programs: Create linked list Insertion elements Deletion elements Display elements
Week	**Specific Learning Outcomes**	**Resources**	**Practical**

5	Stacks Sequential /dynamic implementation, insertion (push) ,deletion(pop) element to/from stack		Writing programs: Push element Pop element Display elements
Week 6	**Specific Learning Outcomes**	**Resources**	**Practical**
	queue Sequential /dynamic Addition/deletion element) to/from queue		Writing programs: Add element Delete element Display elements
Week 7	**Specific Learning Outcomes**	**Resources**	**Practical**
	Circular queue Sequential implementation Addition/deletion element		Writing programs: Create linked list Insertion elements Deletion elements Display elements
Week 8	**Specific Learning Outcomes**	**Resources**	**Practical**
	Stack applications: Infix/prefix/postfix notation Evaluation of arithmetic expression using stack		Writing programs: To convert from infix to postfix notation To evaluate arithmetic expression
Week 9	**Specific Learning Outcomes**	**Resources**	**Practical**
	Mid Term Exam		

	Specific Learning Outcomes	Resources	Practical
Week 10	Non linear data structure Graph Algorithms: Directed graph, undirected graph examples of graph applications Representation techniques in memory(using two dimension array)		Writing programs: Implement graph using two dimensional array
	Specific Learning Outcomes	**Resources**	**Practical**
Week 11	To be able to describe trees concepts - Trees and binary trees - Binary search trees		Writing programs: Implement a B.tree using array Implement B.tree using linked list
	Specific Learning Outcomes	**Resources**	**Practical**
Week 12	To be able to describe Elementary sorting Methods - Inserting sort - Selection sort - Bubble sort - Quick sort		Writing program Sorting techniques
	Specific Learning Outcomes	**Resources**	**Practical**
Week 13	Searching Sequential search Binary search indexed sequential search		Writing programs: Searching techniques

	B.tree indexing		
Week	**Specific Learning Outcomes**	**Resources**	**Practical**
14	General Review		

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
Home Works, Lap actives 20%	20%	20%	Theoretical 40%

Subject	Database Systems Concepts	**Course Code**	IT218	**Theoretical**	3 hrs / wk
Semester	Four	**Prerequisite**	IT214	**Practical**	3 hrs / wk

Program Learning Component

Week 1

1. Basic Concepts of Database (Introducing Database Systems)

Specific Learning Outcomes	Resources	Practical
• Some common uses of database systems. • File-based systems. • Problems with file-based approach. • The Evolution of Database Technology. • Meaning of the term database. • Meaning of the term Database Management System (DBMS). • Typical functions of a DBMS. • Major components of the DBMS environment. • Personnel involved in the DBMS environment. • Advantages and disadvantages of DBMSs. • History of Database Systems.	Projector.	

Week 2

2. Database environment

Specific Learning Outcomes	Resources	Practical

	• Database applications, users and their roles. • The three-level architecture. • Contents of external, conceptual, and internal levels. • Purpose of external/conceptual and conceptual/internal mappings. • Meaning of logical and physical data independence • Most popular data models. • Software components of a DBMS. • Multi-User DBMS architectures • Distinction between DDL and DML.	Projector	• Introducing SQL-A Relational Database Language An Introduction to: • Data definition language (DDL). • Data manipulation language (DML).
Week 3-4	**3. Understanding Relational Data Model**		
	Specific Learning Outcomes	**Resources**	**Practical**
	• The Relational Model. • Terminology of relational model. • How tables are used to represent data. • Properties of database relations. • How to identify candidate, primary, and foreign keys. • Meaning of entity integrity and referential integrity. • Purpose and advantages of views. • Relational Integrity • Business Rules • Relational Algebra and the function of the relational algebra operations.	Projector	• Creating the Database • Creating and Dropping a Table • Altering Table (Adding and Dropping a Column**)** • Inserting Data • Deleting Data • Updating Data
Week 5-6	**4. Introducing Database Design**		
	Specific Learning Outcomes	**Resources**	**Practical**

	• Information Systems lifecycle. • Describe the phases of a typical database application lifecycle. • Database Design (logical and physical).	Projector	• Basic SQL Queries • Retrieving Data by Using the SELECT Statement • Using the WHERE Clause to Specify Rows • Filtering Data • Formatting Result Set
Week 7-8	**5. Understande Entity Relationship Modeling**		
	Specific Learning Outcomes	**Resources**	**Practical**
	• Data Modelling using ER and EER Models. • Entities and Relationships. • ER Diagrams. • Sub Classes, Super classes, and Inheritance. • Specialization and Generalization. • Relational Database Design Using ER-to-Relational Mapping .	Projector	• Grouping and Summarizing Data. • Using Aggregate Functions. • GROUP BY Fundamentals.
Week 9-10	**6. Describe the process of Normalization**		
	Specific Learning Outcomes	**Resources**	**Practical**
	• Information redundancy and update anomalies. • Functional Dependencies. • Definition of Functional Dependency. • Normalization process. • Normal From Pased on Primary Key. • Introduction to Normalization • First Normal Form (1NF) • Second Normal Form (2NF) • Third Normal Form (3NF)	Projector	• Nested Queries and Set Comparisons • Working with Subqueries

	• Boyce-Codd Normal Form (BCNF)		
Week 11-12	**7. Concurrency Control**		
	Specific Learning Outcomes	**Resources**	**Practical**
	• Distributed databases. • *ACID* properties. • Concurrency Control Techniques. • Two Phase locking techniques.	Projector	• Joining Multiple Tables • Using Aliases for Table Names • Combining Data from Multiple Tables • Combining Multiple Result Sets • VIEWS in SQL

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

Recommended Textbooks:

1. RamezElmasri and Shamkant B. Navathe, Fundamentals of Database Systems, Second Edition, The Benjamin/Cummings Publications Company, Inc., 1994.

Subject	Operating Systems	**Course Code**	IT220	**Theoretical**	3 hrs / wk
Semester	Four	**Prerequisite**	CT115	**Practical**	3 hrs / wk

Program Learning Component

Week 1

1. Introduction to System Software

Specific Learning Outcomes	Resources	Practical
Overview of all system software's :- Compiler Assembler Linker Loader Operating system I/O manager	Projector.	

Week 2-3

2. Fundamentals of Operating System

Specific Learning Outcomes	Resources	Practical
OS services and Components Multitasking , Multiprogramming, Multiprocessing Time Sharing Buffering	Projector	**An Overview of the Linux Operating System**

	Distributed OS		
Week 4-5	**3. Processes and Threads**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Concept of process and threads Process states Process management Multithreading	Projector	Example OS : Linux
Week 6-7	**4. Concurrency Control**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Principles Of Concurrency. Mutual Exclusion And Semaphores. Deadlock Detection And Prevention.	Projector	Example OS : Linux
Week 8-9	**5. Memory Management**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Simple Memory Management Techniques. Virtual Memory Management.	Projector	Example OS : Linux
Week 10-11	**6. I/O and File Management**		
	Specific Learning Outcomes	**Resources**	**Practical**
	I/O Management and Disk Scheduling. File Management.	Projector	Example OS : Linux
Week	**7. Case Study**		

12	Specific Learning Outcomes	Resources	Practical
	Case Study Android OS	Projector	

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

NOTE: Course work may include assignments, projects and practical activities.

لـغة إنجليزية 4

Subject	English language 4	**Course Code**	EN263	**Theoretical**	4 hrs / wk
Semester	Four	**Prerequisite**	EN262	**Practical**	0 hrs / wk

Program Learning Components

Week 1-5	**4. Grammar:** *__Affixes__ ** Nouns **verbs **Adjectives __*Diagramming__ __**Subject-predicate – complement__ __***__Kinds of complements __***__ Direct object *** Indirect object *** Predicate adjective __*Adjective and adverb modifiers__ *** Adjectives modify nouns or pronouns *** Adjective phrases modify adjectives, verbs

	*** Adverbs modify adjectives, verbs, or other ADV ***Adverb phrases modify adjectives, verbs, or other ADV *** Adjective clauses modify nouns or pronouns ****Noun clauses** ****Verbal phrases**
Week **6-10**	**12.COMPREHENSION:** Oxford eng. for computing
Week **11-14**	**13.COMPOSITION** *** COMPOSITION with practical purpose** **Writing short composition **Writing friendly letters **Writing business letters

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical
10	30	60

الفصل الدراسى الخامس

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT 310	Application Development	4	3	3	IT 212
IT 312	System Analysis & Design	4	3	3	IT 218
IT 319	Advanced Database Systems	4	3	3	IT 218
NT 320	Fundamentals of Networking	4	3	3	None
EN 364	English Language 5	2	2	0	EN 263
EN 300	Technical Documentation 1	2	2	0	EN 263

Subject	Application Development	**Course Code**	IT310	**Theoretical**	3hrs / wk
Semester	Five	**Prerequisite**	IT212	**Practical**	3hrs / wk

Program Learning Components

Week 1	**Unit 0: Introduction** **Contents:** Introduction 1 What Is a Workshop? 2 Workshop Materials 3 Prerequisites 4 Workshop Outline 5 Setup 7 Demonstration: Using Microsoft Virtual PC 9 Microsoft Learning Technology Specialist Curriculum for Visual Studio 2005 10 Microsoft Learning Product Types 12 Microsoft Certification Program 13 Facilities 16
Week	**Unit 1: Creating a Simple Windows Forms Application**

2	**Contents:** Overview 1 Components of a Windows Forms User Interface 2 vent Handling in a Windows Forms Application 4 Lab Scenario 6 Lab Tasks and Objectives 7 Lab: Creating a Simple Windows Forms Application 8 Lab Discussion 21 Best Practices 22
Week 3-4	**Unit 2: Configuring Standard Controls**
	Contents: Overview 1 Windows Forms Controls by Function 2 Lab Scenario 4 Lab Tasks and Objectives 5 Lab: Configuring Standard Controls 6 Lab Discussion 23
Week 5	**Unit 3: Building Menus**
	Contents: Overview 1

	Menus in Windows Forms 2 Lab Scenario 4 Lab Tasks and Objectives 5 Lab: Building Menus 7 Lab Discussion 21 Best Practices
Week 6-7	**Unit 4: Displaying and Editing Data by Using Data-Bound Control**
	Contents: Overview 1 Binding Data to a Control 2 DataGrid View Control 4 Lab: Scenario 6 Lab: Tasks and Objectives 7 Lab: Displaying and Editing Data by Using Data-Bound Controls 9 Lab: Discussion 30 Best Practices 31
Week 8	**Unit 5: Providing User Assistance and Enhancing Usability**
	Contents: Overview 1 Providing User Assistance 2 Implementing Accessibility Features 4 Implementing Globalization and

	Localization 6 Lab Scenario 8 Lab Tasks and Objectives 9 Lab: Providing User Assistance and Enhancing Usability 11 Lab Discussion 27
Week 9	**Unit 6: Creating Consistent Applications by Using Dialog Boxes and Forms Inheritance**
	Contents: Overview 1 Dialog Boxes in a Windows Forms Application 2 Windows Forms Inheritance 4 Lab Scenario 6 Lab Tasks and Objectives 7 Lab: Creating Consistent Applications by Using Dialog Boxes and Forms Inheritance 8 Lab Discussion 22
Week 10	**Unit 7: Printing Content and Creating Reports**
	Contents: Overview 1 Printing in a Windows Forms Application 2

	Reporting in a Windows Forms Application 4 Lab Scenario 5 Lab Tasks and Objectives 6 Lab: Printing Content and Creating Reports 7 Lab Discussion 15
Week 11-12	**Unit 8: Performing Asynchronous Tasks by Using the Background Worker Component**
	Contents: Overview 1 Asynchronous Tasks in Windows Forms Applications 2 Lab Scenario 4 Lab Tasks and Objectives 5 Lab: Performing Asynchronous Tasks by Using the BackgroundWorker Component 6 Lab Discussion 12 Best Practices 13
Week 13-14	**Unit 9: Deploying Applications by Using ClickOnce**
	Contents: Overview 1 Windows Forms Application Deployment Options 2

Subject	System Analysis & Design	**Course Code**	IT312	**Theoretical**	3 hrs / wk
Semester	Five	**Prerequisite**	IT218	**Practical**	3 hrs / wk

General Objective

1. Understanding the nature of information systems and its characteristics.
2. Illustrating the most common tools, techniques, and theories currently used in analyzing and designing information (software) systems.
3. Learning how to gather and document system requirements and write formal specifications.
4. Learning how to model the system specifications in traditional way (structured model).
5. Introducing object-oriented systems modeling using UML (Unified Modeling Language) diagrams such as use cases, class diagrams, sequence diagrams, activity diagrams, etc..
6. Gain practical experience with information systems analysis and design, working as part of a project team.

	Defining information systems and describing the role of system analyst		
	Specific Learning Outcomes	**Resources**	**Practical**
Week 1	1- Introducing course contents and course plan. 2- To define concepts of information systems 3- To understand the role of system analyst within the organization. 4- To become familiar with the skills	-Data show -Smart board -white board	

	(analytical, technical, management, interpersonal…etc) and the knowledge that system analyst must have.		
Week 2	**Describing information systems development life cycle (SDLC)**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Understanding the phases of system development life cycle. 2- Understanding, models, tools, methods, methodologies. 3- Comparing system development approaches: structured model vsobject oriented model. 4- New approaches of system (software) development process.	-Data show -Smart board -white board - standard case study	1-Forming project groups. 2-introduce project details (deliverables, due dates, assessment policy,…etc).
Week 3	**Describing system development methodologies**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Understanding the system (software) development methodologies**.(SDLS)** a. Sequential models: waterfall, modified waterfall, incremental. b. Iterative models: fast prototyping, spiral. c. Rapid Application Development **(RAD**). d. Joint Application Development **(JAD)**	-Data show -Smart board -white board -Standard case study description.	1-Introducing course project 2- choosing the best alternative development model for the given project
Week 4	**Determining system requirements**		
	Specific Learning Outcomes	**Resources**	**Practical**

	1- Requirements determination. a. Fact finding techniques. b. Requirements gathering. c. Requirements documentation. 2- Develop a business process model. 3- System requirements document (user perspective)	-Data show -Smart board -white board -Standard case study(samples of User requirements Documents)	1-Discussing Project progress. 2-Practicing requirements gathering tools e.g, interviews, site visiting and questionnaires. 3-practicing User requirements documentation Submission due of: Project proposal.
Week 5	**Documenting system requirements specifications**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Translating customer needs into technical specification. 2- Document System Requirements and Specifications using standard documents. 3- The characteristics of System Requirements Specifications document. 4- Data Dictionary.	-Data show -Smart board -white board - Standard case study (Samples of requirements specifications standard documents)	1-Discussing Project progress. 2-Practicing system specification documentation. 3- Submission due of: Business process model + User requirements document.
Week 6	**Modeling system requirements: Process oriented modeling**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Defining analysis modeling. 2- Describing process specification in structured English. 3- Understanding process oriented	-Data show -Smart board	1-Discussing Project progress. 2-Prcticing process

	modeling. a. Use cases. b. Data flow diagrams. c. Decision tables.	-white board - Standard case study (Samples of Process modeling diagrams). -CASE tools.	modeling using CASE tools. 3-Submission due of: System Requirements specification document. +data dictionary.
Week 7	**Modeling system requirements: Process oriented modeling (cont)**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Developing Data Flow Diagrams. a. Context diagram. b. Over view diagram. c. Leveling of DFD's. d. Leveling rules. 2- Developing process specification using structured English.	-Data show -Smart board -white board - Standard case study (Samples of Process modeling diagrams). -CASE tools.	1-Discussing Project progress. 2-Prcticing DFD's designing and leveling using CASE tools. 3-Submission due of: System Requirements specification document. +data dictionary
Week 8	**Modeling system requirements: Data oriented modeling**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Understanding and developing Data oriented modeling. a. Business rules. b. Data entities. c. Entities relationships. d. (ER-D)Entity-relationship diagram.	-Data show -Smart board -white board Standard case	1-Discussing Project progress. 2-Prcticing Data modeling + developing ER-D using CASE

	e. (EER-D)Enhanced Entity Relationship Diagram.	study (Samples of Data modeling diagrams). -CASE tools.	tools. 3-Submission due of: Process modeling (DFD's) +process specifications.
Week 9	**Modeling system requirements: Behavioral modeling**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Define control elements (Event, state, trigger,…etc) 2- Understanding and developing event table. 3- Understanding and developing state transition diagram. 4- Understanding and developing control flow diagram.	-Data show -Smart board -white board Standard case study (Samples of behavioral modeling diagrams). -CASE tools.	1-Discussing Project progress. 2-Prcticing behavioral modeling 3-Submission due of: Data modeling: Business rules +ER-D
Week 10	**Introducing system design concepts and principals.** **Introducing architectural design.**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Design objectives. 2- Design principles and architectural design (modularity, implement- ability, aesthetics, coupling and cohesion ...etc). 3- Selecting design strategy. 4- Architectural design. 5- Architectural design pattern: pipe-and-filter, shared-data, event-driven, **(**layered architectures): client-server, client-broker-server, peer-to-peer	-Data show -Smart board -white board Standard case study (Samples of architectural design). -CASE tools.	1-Presenting Project progress. (first presentation) 2-Prcticing architectural design 3-Submission due of: Behavioral modeling: Event table.

	…etc).		
Week 11	**Introducing Detailed design**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- From Architectural to Detailed design. 2- Detailed design (subsystems, units, packages, components; dependencies; interfaces, notations… etc). 3- Input and Output design. 4- Interface design. 5- Documenting system design.	-Data show -Smart board -white board Standard case study (Samples of design document). -CASE tools	1-Presenting Project progress.(continue) 2-Practicing detailed design 3-Submission due of: Design strategy+ architectural design
Week 12	**-Introducing Object Oriented analysis and design model.** **- Introducing UML(Unified Modeling Language)**		
	Specific Learning Outcomes	**Resources**	**Practical**
	1- Defining Object Orientation model? 2- Understand the importance of Object Orientation (maintenance, reusability, modifiability ...etc). 3- Object-Oriented Analysis vs. Traditional Methods 4- Understanding Object Oriented concepts (object, class, subclass, attributes, methods, message, Interface... etc). 5- Understanding Object Oriented characteristics(encapsulation, inheritance , Polymorphism, override… etc) 6- Introducing UML fundamentals.	-Data show -Smart board -white board -UML standard notation.	1-Final project presentation. 2- Practicing logic thinking based on object orientation.

<table>
<tr><td rowspan="3">Week
13</td><td colspan="3">- Introducing UML (Unified Modeling Language).
- Understanding OO system modeling using Use Case.</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td>1- Defining Use Case concepts (scenario, sequence, actor… etc).
2- Describing UML notations.
3- Developing Use Case diagrams.
4- Understanding Use Case boundary and relationships (<include>, <extend>).
5- Use Case generalization & abstraction.</td><td>-Data show
-Smart board
-white board
-Standard case study (Samples of Use Case diagrams).
-CASE tools</td><td>1-Final project presentation (if necessary).
2- Practicing system modeling using Use Case.</td></tr>
<tr><td rowspan="3">Week
14</td><td colspan="3">- Introducing UML (Unified Modeling Language).
- Describing OO system analysis modeling using UML diagrams.</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td>1- Object oriented modeling using:
Class diagram & Object diagram.
Sequence diagram.
Collaboration diagram.
State diagram.
Activity diagram.
Components diagram.
Deployment diagram.
2- Conceptual modeling by UML using class diagram.</td><td>-Data show
-Smart board
-white board
-Standard case study (Samples of UML diagrams).
-CASE tools</td><td>Final project presentation (if necessary).</td></tr>
</table>

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination

40% (50% individual + 50% group work)	20%	10% Final project presentation	30%

Textbooks:

1- 1-John W. Satzinger, Robert B. Jackson, and Stephen D. Burd ,**Systems Analysis & Design in a Changing World,** Fifth Edition,course technology 2008, **ISBN-10:** 1423902289

2- Craig Larman, Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development ,(3rd Edition,Prentice Hall; 2004, ISBN-10: 0131489062

Subject	Advanced Database Systems	**Course Code**	IT319	**Theoretical**	3hrs / wk
Semester	Five	**Prerequisite**	IT218	**Practical**	3hrs / wk

General Objective

1. Understanding Advanced Data Models**.**
2. Introducing Heterogeneous / Multidatabase systems
3. Understanding Query Processing and Optimization
4. Understanding Transaction processing
5. Introducing Concurrency Control Techniques
6. Introducing Recovery Techniques
7. Introducing Security, Integrity and Control
8. Introducing Object-Oriented Database Systems.
9. Introducing Distributed Database Systems.
10. Understanding Client/server Database.
11. Introducing Multimedia Databases.

Week 1	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to:	**Give an overview of:**	-Capability to project

	Describe database roles. Explain the relational data model Explain the OO data model Describe object-relational data model.	Relational data model OO data model. Explain: OO data model Object-relational data model.	the Desktop to all studentsWhite board. -Printed materials for each student. -A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Discuss and compare relational data model to OO model. Describe object-relational data model.	Organize class based discussion covering relational data model, OO data model and Oject-relational data model. Give exmples of object-relational data model.	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Weeks 2-3	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Define and Discuss heterogeneity, taxonomy Describe multidatabasemodel ,multidatabase conflicts and	Explain and Discuss: heterogeneity, taxonomy. multidatabase models multidatabase conflicts and multidatabase solutions.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive

	multidatabase solutions.		workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to discuss and explain: heterogeneity, taxonomy. multidatabase models , multidatabase conflicts and multidatabase solutions.	Demonstrate multidatabase prototypes and systems Demonstrate to students examples of multidatabase models	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 4-5	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe and discuss: Indexing Hashing Tree data structures Query processing strategies, query representations and query improvement.	**Explain:** Indexing Hashing Tree data structures Query processing strategies, query representations and query improvement.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to Know how to use:	Supervise the laboratory and support	Personal Computer loaded with an

	Indexing Hashing Tree data structures Query processing strategies, query representations and query improvement.	students to practisingquery processing.	appropriate DBMS for each student A comprehensive workbook for students
Week **6-7**	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Discuss transactions and transaction failures. Identify and discuss types of failures. Describe system log, checkpoint, schedules, conflicts, serializability, and recoverability.	Explain and Discuss: Transactions and transaction failures. Types of failures. Describe system log, checkpoint, schedules, conflicts, serializability, and recoverability	Capability to project the Desktop to all student White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Identify transaction failures. Handle transaction failures using the appropriate technique.	Demonstrate the concept of checkpoint, schedules, conflicts, serializability, and recoverability. Supervise the laboratory and support students to practising transaction processing.	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week	***Theoretical Content***		

8	**Specific Learning Outcomes**	**Teacher's activities**	**Resources**
	To be able to: Describe and discuss Concurrency Control Techniques.	**Explain**: Concurrency control mechanisms. And illustrate two-phase locking. And Illustrate granularity. Explain issues related to concurrency control.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to know: When and how to use the appropriate concurrency control technique.	Demonstrate the concept of two-phase locking and granularity.	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 9	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Describe recovery strategies. Identify transaction states. Describe backups, and logs	**Explain:** Recovery strategies. Transaction states. Backups and logs	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive

			workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Backup a database. Use the appropriate recovery technique to recover a database.	Discuss and illustrate by examples recovery strategies, transaction states, backups and logs	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 10	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Define and discuss threats, defence mechanisms, integrity rules, authentication and authorization.	**Explain:** Define and discuss threats, defence mechanisms, integrity rules, authentication and authorization.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to:	Discuss and explain threats, defense	Personal Computer loaded with an

	Identify threats. Use the appropriate defence mechanisms to protect a database. Use integrity rules, authentication and authorization.	mechanisms. Illustrate and give examples of how to implement integrity rules, authentication, authorization	appropriate DBMS for each student A comprehensive workbook for students
Week 11	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Describe object data model. Describe OO architectures.	**Explain:** Object data model. OO architectures.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Discuss and explain object data model and it's architectures	Demonstrate to the students the OO model and it's architectures. Give product examples	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week	***Theoretical Content***		

12	Specific Learning Outcomes	Teacher's activities	Resources
	To be able to: Describe the concept of Distributed Database. Describe Distributed Database architectures.	**Explain:** The concept of Distributed Database. Distributed Database architectures	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to discuss and explain: The concept of Distributed Database. Distributed Database architectures.	Illustrate by means of examples the concept of Distributed Database and it's architectures. Give and discuss product examples	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 13	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Describe the concept of Client/server database systems. Describe it's architectures	**Explain:** The concept of Client/server database systems. The architectures of Client/server database systems.	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive

			workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Describe and explain Client / Server database system.	Discuss and demonstrate practical Client/server Database Systems examples	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 14-15	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to: Describe deductive database model. Introduce deductive database system architectures Describe query evaluation and constraints	**Explain and discuss:** Deductive database model. Deductive database system architectures Query evaluation and constraints	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to discuss and explain:	Describe and illustrate	Personal Computer

	Deductive database model. Deductive database system architectures Query evaluation and constraints	deductive database system and it's architectures	loaded with an appropriate DBMS for each student A comprehensive workbook for students
Week 16	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to: Describe Multimedia Databases concepts. Discuss Multimedia database issues	**Explain:** Multimedia Databases concepts. Multimedia database issues	Capability to project the Desktop to all students White board Printed materials for each student. A comprehensive workbook of Advanced Database Management Systems.
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to discuss and explain: Multimedia Databases concepts. Multimedia database issues.	Show and illustrate the concept of Multimedia database and its related issues.	Personal Computer loaded with an appropriate DBMS for each student A comprehensive workbook for students

Group Project:
Students will participate in a group to develop a multidatabaseproject.
Assessment:

Course Work	Course tests	Practical	Final Examination
10%	30%	20%	40%

Recommended Textbooks & References:

1. RamezElmasri and Shamkant B. Navathe, Fundamentals of Database Systems, Second Edition, The Benjamin/Cummings Publications Company, Inc., 1994.
2. Michael Stonebraker, Readings in Database Systems, Morgan Kaufmann Publishers, Second Edition

Subject	Fundamentals of Networking	**Course Code**	NT320	**Theoretical**	3hrs / wk
Semester	Five	**Prerequisite**	None	**Practical**	3hrs / wk

Program Learning Components

Week 1	**Introduction to Network World**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain the importance of data networks and the internet in supporting business communications. Explain how communication works in data networks.	Flash Video	Chapter Labs
Week 2	**Communication over the Network**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain LANs WANs and Internetworking Understand the role of Protocols Explain the layered Model Explain Network Addressing	On-line Cisco curriculum	Chapter Labs
Week 3	**Application Layer Functionality and Protocols**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain the role of application layer	On-line Cisco	Chapter Labs

	Making provisions for services Explain application layer protocols	curriculum	
Week 4-5	**OSI Transport Layer**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain the role of transport layer Making provisions for services Explain and managing TCP protocol sessions. Understand UDP protocol low overhead.	On-line Cisco curriculum	Chapter Labs
Week 6	**OSI Network Layer**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain IPv4 Explain Network-dividing Devices Explain How data packets are routed	On-line Cisco curriculum	Chapter Labs
Week 7-8	**Modeling system requirements: Process oriented modeling.**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain how IPv4 Addressing works Is it on my network? Calculating Addresses Testing the network layer.	On-line Cisco curriculum	Chapter Labs
Week 9	**Data Link Layer**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain media access control techniques.	On-line Cisco	Chapter Labs

	Framing the data. Addressing the data	curriculum	
Week 10	**Modeling system requirements: Data oriented modeling**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain communication signals. Explain Physical signaling and encoding. Physical connections	On-line Cisco curriculum	Chapter Labs
Week 11-12	**The Ethernet**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Explain Ethernet communication through LAN. Ethernet Frame. Explain Ethernet media access control. The differences between hubs and switches. Understand address resolution Protocol.	On-line Cisco curriculum	Chapter Labs
Week 13	**Planning and Cabling Networks**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Making LANs physical connections. Devices Interconnections. Developing addressing schemes. Calculating subnets.	On-line Cisco curriculum	Chapter Labs
Week	**Planning and Cabling Networks**		

14	Specific Learning Outcomes	Resources	Practical
	Explain IOS basics Configuring Cisco devices Verifying connectivity. Monitoring and documenting networks.	On-line Cisco curriculum	Chapter Labs

Course Assessment:

Course Work	Tests	Labs	Final Exam	Final Exam Practical
10	20	10	40	20

NOTE: Course Work may include assignments, projects and practical activities.

Textbooks:

1. Cisco Online Curriculum
2. CCNA:Cisco Certified Network Associate Study Guide.5th Edition by Todd Lammle
3. Network+ Certification Bible

لـغـة إنجليزية 5

Subject	English Language 5	**Course Code**	EN364	**Theoretical**	2hrs / wk
Semester	Five	**Prerequisite**	EN263	**Practical**	0hrs / wk

Program Learning Components

Week 1-4	**COMPREHENSION:** 13.1. Selections from magazines such as: 13.2. P.C. magazine 13.3. Byte magazine 13.4. Data communication 13.5. Word of Computer
Week 5-8	**COMPOSITION:** • Composition with creative angle: • Writing the long composition • Writing on specific topics • Writing on general topics • Organizing materials into paragraphs
Week 9-11	**SUMMARIZNG THE TOPICS TAKEN ABOVE:** • Definition of process • Process states • Process transitions

	• The context of a process
Week 12-14	**BUSINESS**

**ACCT. ACCOUNT	**DEPT. DEPARTMENT
**ADV. ADVERTIAEMENT	**EA. EACH
**AMT. AMOUNT	**ENC. ENCLOSE
**APPROX. APPROXIMATE	**EST. ESTABLISHED
**ASSN. ASSOCIATION	**BWD BACKWARD
**BAL. BALANCE	**FWD FORWARD
**BBL. BARREL	**INT. INTEREST
**BROS. BROTHERS	**LTD. LIMITED
**C.O.D EACH ON DELIVERY	**CORP. CORPORATE
**C/O. CARE OF	**REC. RECEIPT

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
20	30	50

التقارير الفنية بالإنجليزية 1

Subject	Technical Documentation I	**Course Code**	EN300	**Theoretical**	2hrs / wk
Semester	Five	**Prerequisite**	EN263	**Practical**	0hrs / wk

COURSE OBJECTIVES

On completion of this course, students should be able to:

- Identify and strategically target a desired audience for a given communication situation.
- Effectively integrate text and graphic elements to create document designs that clearly convey complex, technical information.
- Identify, incorporate, and accurately cite sources.
- Revise written technical documents for content, organization, and coherence as well as for grammar, tone, and style.
- Contribute meaningfully to collaborative writing projects such as instructions, definition, descriptions, and technical reports.

	Contents:	**Resource**
Week 1	• Course overview • Writing process / Audience analysis • Style and tone	LCD projector with a laptop or desktop computer / Screen.
Week 2	**Contents:** • Organization: patterns, paragraphs, • headings and grouping • Grammar and mechanics	**Resource** LCD projector with a laptop or desktop computer / Screen.

Week 3	**Contents:**	**Resource**
	• Lists and parallel structure • Writing effective sentences (theory)	LCD projector with a laptop or desktop computer / Screen.
Week 4	**Contents:**	**Resource**
	• Writing instructions • Writing effective sentences (correction and feedback)	LCD projector with a laptop or desktop computer / Screen.
Week 5	**Contents:**	**Resource**
	• Collaborative writing • Assignment Conferences	LCD projector with a laptop or desktop computer / Screen.
Week 6	**Contents:**	**Resource**
	• Document design and Illustration. • Introduction to definitions and descriptions	LCD projector with a laptop or desktop computer / Screen.
Week 7	**Contents:**	**Resource**
	• Writing Reports of Technical Objects • Describing size, shape, design and utility	LCD projector with a laptop or desktop computer / Screen.
Week 8	**Contents:**	**Resource**
	• Writing Reports of Technical Processes • Describing steps, materials and equipment	LCD projector with a laptop or desktop computer / Screen.
Week	**Contents:**	**Resource**

9	• Active-passive voice / Your Viewpoint • MID-TERM TEST	LCD projector with a laptop or desktop computer / Screen.
Week 10	**Contents:**	**Resource**
	• Correspondence: Writing Letter, Memos and Emails	LCD projector with a laptop or desktop computer / Screen.
Week 11	**Contents:**	**Resource**
	• Writing Laboratory Reports • Assignment Due	LCD projector with a laptop or desktop computer / Screen.
Week 12	**Contents:**	**Resource**
	• Research report components • Visuals for data display: selecting and creating.	LCD projector with a laptop or desktop computer / Screen.
Week 13	**Contents:**	**Resource**
	• Writing research reports: • Clarity and conciseness. Credibility of • web resources. Documenting sources • and paraphrasing. Referencing.	LCD projector with a laptop or desktop computer / Screen.
Week 14	**Contents:**	**Resource**
	• Writing complete reports • Course summary • Review Workshop	LCD projector with a laptop or desktop computer / Screen.

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

Textbooks:

- Markel, M. (2007). *Technical Communication*. (8th ed). Boston: Bedford/St. Martin's.
- Alred, G., Brusaw, C. and Oliu, W. (2009). *Handbook of Technical Writing*. (9th ed). Boston: Bedford/St. Martin's.

الفصل الدراسى السادس

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT 314	Human Computer Interaction	4	4	0	**IT 100**
IT 316	Multimedia Technology	4	3	3	**IT 100**
IT 311	Web Application (PHP)	4	3	3	**IT 212**
NT 318	Internet Security	4	4	0	**NT 320**
EN 365	English Language 6	2	2	0	**EN364**
EN 301	Technical Documentation 2	2	2	0	**EN 300**

تفاعـل الإنســان مع الحاسـوب

Subject	Human Computer Interaction	**Course Code**	IT314	**Theoretical**	4hrs / wk
Semester	Six	**Prerequisite**	IT100	**Practical**	0hrs / wk

الأهداف العامة للبرنـامج التعليمي

هذا المقرر يكرس أهمية تصميم أساليب و طرق التفاعل بين الإنسان و الحاسوب أو الأجهزة عموما. إثر دراسة هذا المقرر فإن الطلاب سيتزودون بالمعرفة النظرية و العملية المتعلقة بشؤون تصميم و تنفيذ و تقييم طرفيات التحاور الشر – الحاسوبي و تحديد:

- إلمام الطلاب بالمقصود بالتصاميم الجيدة وكيفية تطبيق ذلك في تصميم طرفيات تفاعل بشر – حاسوبي قابلة لنيل إستحسان و رضى المستخدمين.
- إلمام الطلاب بالتقنيات الملائمة لتنفيذ التصاميم الجيدة لطرفيات التحاور.
- إلمام الطلاب بمجموعة من الطرق لتقييم جودة طرفيات التفاعل بشر – حاسوبي.

المـواد التمهـيديـة

- مقدمة لهندسة البرمجيات Introduction To Software Eng.
- الجانب العملي يتطلب إتقان لغة برمجة لنظام تشغيل ويندوز مثل (Visual Basic) أو لغة برمجة للويب مثل (Java Script +HTML).

ملخص المقرر

التعرض للنواحي النظرية والعملية المتعلقة بتصميم وتنفيذ وتقييم أصول التعامل مع الحواسيب و يشمل ذلك:

- مباديء التصميم و طرق التقييم سواء بتدخل البشر أو بدونهم.
- التقنيات المختلفة لبناء و تنفيذ التصاميم المعنية.

طريقة التدريس

- تشمل المحاضرات النظرية المدعمة بحالات دراسية تبين قصص النجاح وحالات القصور في تصميم طرفيات التفاعل بشر – حاسوبي.
- على الطلاب إثراء النقاش و التفاعل أثناء المحاضرات و كذلك إنجاز الواجبات اللاصفية تطبيقا للمعلومات النظرية و العملية التي تم التعرض لها أثناء الفصل.
- الجانب العملي يتمثل في تطبيق بعض قواعد التصميم الجيد عن طريق لغة برمجة لنظام التشغيل ويندوز مثل (Visual Basic) و لغة برمجة الويب مثل (Java Script + HTML).

عنـــاصر المنـهج

- Introduction to the Course.----------(مقدمة عامة)---
- Overview of HCI.----------(نظرة عامة لتفاعل الإنسان مع الكمبيوتر)----
- History of HCI.----------(تاريخ علم التواصل الإنسان مع الكمبيوتر)---
- Elements of HCI.----------(عناصر تواصل الإنسان مع الكمبيوتر)----
- The Humane Side.----------(معالجة البشر للمعلومات القنوات – الذاكرة – الفكر- السلوك)---
- The Computer Side.----------(سلوك الحاسوب و معدات الإتصال المعلوماتي)---
- The Interaction.----------(نماذج التواصل و العوامل البشرية)----
- Usability Paradigms and Principles.------(نظم التواصل و خصائص القابلية للإستخدام)----
- Interaction Design.----------(تصميم التواصل)

- Web Based Design.----------(تصميم نظم الإنترنت)

- Usability Engineering.----------(هندسة القابلية للإستخدام \ طرق الإختبار و التقييم)

- Prototyping.----------(مسودات التصاميم)

- Computer – Supported Cooperative Work (CSCW). (نظم العمل الجماعي المدعم حاسوبيا)

المراجع

- Dix, A, Finlay, J, Abowd, G. and Beale, R.(1998). Human Computer Interaction, Second Edition, Prentice Hall.
- Shenidermann, B. (1988) Designing the user Interface, Third Edition, Addison- Wesley.
- إرشادات لخصائص القابلية للإستخدام
- http://www.usability.gov/guidelines/index.html
- Share Ware:

  http://www.pages.cpsc.ucalgray.ca/~saul/hci_topics/papers/lewisriemanbook/index.html

- Web design:
  http://usableweb.org/

تقنيــة الوســائط المتعددة

Subject	Multimedia Technology	**Course Code**	IT316	**Theoretical**	3hrs / wk
Semester	Six	**Prerequisite**	IT100	**Practical**	3hrs / wk

عنــاصر البرنــامج التعلـيمي	
الأسبوع 1	**5. مفهوم الوسائط المتعددة** • مفهوم الوسائط المتعددة • تعريف لتقنية الوسائط المتعددة • تاريخ الوسائط المتعددة • استخدامات الوسائط المتعددة
الأسبوع 2	**14.مقدمة للوسائط المتعددة** • تطبيقات الوسائط المتعددة • نظم الوسائط المتعددة • أهم مميزات نظم الوسائط المتعددة • تعريف HyperText • تعريف hyperMedia • تحديات استخدام الوسائط المتعددة
الأسبوع 3	**15.عنصر النص** • أهداف استخدم النص في الوسائط • مكونات النص • ماهر pixel و point • Fontو Typefacesما هو • النص وأنواعه (Serif or Sans Serif) • ماهو (Ascender وDescender وLeading وTracking وKerning) • ما هو Bitmapped and vector fonts

	• ما هو Jaggies and Antialiasing • أنواع ملفات النص
الأسبوع 4	**16.عنصر الصوت** • الصوت • مقدمة لفيزيائية الصوت • تعريف موجات الصوت حدة الصوت • خصائص موجات الصوت • التحويل الى الصوت الرقمي • عملية sampling • Pulse Code Modulation • معامل Sampling (sample rate و sample size) • Quantization • حساب حجم ملفات الصوت • برمجيات الصوت • أنواع ملفات الصوت (mp3,wav,midi)
الأسبوع 6-5	**17.عنصر الصورة** • أهمية الصورة في الوسائط المتعددة • أنواع الصورة (Bitmap ,Victor) • معامل الصورة Bitmap (Resolution , Color depth). • حساب حجم ملفات الصورة • أنواع ملفات الصورة Bitmap • مميزات وعيوب الصورة نوع Bitmap • الصورة نوع Victor • أنواع الصورة نوع Victor • مميزات وعيوب الصورة نوع Victor
الأسبوع 8-7	**18.عنصر الحركة** • تعريف الحركة للوسائط المتعددة • تاريخ استخدام الحركة • عناصر الحركة وطبيعة الحركة • أنظمة الحركة التقليدية (Cell animation) Path animation , • التأثيرات الخاصة بالحركة (Morphing ,Warping) • Keyframe animation

	• Motion capture • Procedural animation • الأنواع المختلفة لملفات الحركة • مميزات وعيوب استخدام الحرك
الأسبوع 10-9	**19.الفيديو**
	• الفيديو التناظري(التقليدي) • أنظمة الفيديو التناظري • تعريف للفيديو الرقمي • حساب حجم ملف الفيديو • أنواع الملفات المختلفة • عيوب ومميزات الفيديو
الأسبوع 12-11	**20.تقنية الضغط**
	• مفهوم ضغط البيانات • لماذا استخدام تقنية ضغط البيانات • مفهوم تقنية ضغط البيانات (Lossless and Lossy Data Compression) • أنواع تقنية البيانات (Static,Adaptive,Hybird) • الأنواع المختلفة لملفات الضغط • طريقة Run-Length Encoding • طريقة Static Huffman Coding

تطبيقـات الويب (PHP)

Subject	Web Application	**Course Code**	IT311	**Theoretical**	3hrs / wk
Semester	Six	**Prerequisite**	IT212	**Practical**	3hrs / wk

General Objective

This course focuses on using the Microsoft Visual Studio® .NET environment and the Microsoft .NET platform to create an ASP.NET Web application that delivers dynamic content to the Web.

1- Introducing Microsoft .NET Framework

2- Understand using Microsoft Visual Studio .NET

3- Introduces using Microsoft .NET-Based Languages

4- Understand the process of creating a Microsoft ASP.NET Web Form

5- Describe adding Code to a Microsoft ASP.NET Web Form

6- Explain tracing in Microsoft ASP.NET Web Applications

7- Understand Validating User Input

8- Understand creating User Controls

9- Describe accessing Relational Data Using Microsoft Visual Studio .NET

10- Illustrate calling Stored Procedures with Microsoft ADO.NET

11- Understand Reading and Writing XML Data

12- Explain consuming and Creating XML Web Services

13- Illustrate managing State

14- Explain configuring, Optimizing, and Deploying a Microsoft ASP.NET Web Application

15- Demonstrate securing a Microsoft ASP.NET Web Application

Week	**1: Introducing Microsoft .NET Framework**

1	***Theoretical Content***		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe : • .NET Framework. • ASP.NET • Lab Application	To explain to students: • .NET Framework. • ASP.NET • Lab Application	• Capability to project and demonstrate .NET Framework. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
			• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Weeks 2	**2: Understand using Microsoft Visual Studio .NET**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe : • Visual Studio .NET • How to create an ASP.NET Web Application Project	To explain to students: • Visual Studio .NET • How to create an ASP.NET Web Application Project	• Capability to project and demonstrate . Visual Studio .NET • How to create an ASP.NET Web Application Project • comprehensive workbook of .NET

			Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to : • Use Visual Studio .NET • Create an ASP.NET Web Application Project	Supervise the laboratory and support students in doing exercises of : • Using Visual Studio .NET • Creating an ASP.NET Web Application Project	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 3	**3: Introduces using Microsoft .NET-Based Languages**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to : • Describe the .NET Languages • Identify the differences between .NET Languages • Describe creating a component using Visual Basic .NET	To explain : • The .NET Languages • How to identify the differences between .NET Languages • How to create a component using Visual Basic .NET	Capability to project and demonstrate . using Microsoft .NET-Based Languages A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**

	The ability to : • Create a component using Visual Basic .NEt	• Supervise the laboratory and support students in doing exercises of Create a component using Visual Basic .NET	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 4	**4: Understand the process of creating a Microsoft ASP.NET Web Form**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to describe : • Creating Web Forms • Using Server Controls	To explain how to : •Create Web Forms •Use Server Controls	•Capability to project and demonstrate .NET Framework. •A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The Ability to : •Create Web Forms •Use Server Controls	Supervise the laboratory and support students in doing exercises of • Creating Web Forms • Using Server Controls	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 5	**5: Describe adding Code to a Microsoft ASP.NET Web Form**		
	Theoretical Content		

	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe how to : • Use Code-Behind Pages • Add Event Procedures to Server Controls • Use Page Events	Explain to the students how to : • Use Code-Behind Pages • Add Event Procedures to Server Controls • Use Page Events	• Capability to project and demonstrate adding Code to a Microsoft ASP.NET Web Form. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to : • Use Code-Behind Pages • Add Event Procedures to Server Controls • Use Page Events	Supervise the laboratory and support students in doing exercises of • Using Code-Behind Pages • Adding Event Procedures to Server Controls • Using Page Events	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 6	**6: Explain tracing in Microsoft ASP.NET Web Applications**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**

	Be able to describe : • Tracing • Remote Debugging	Explain to the students: • Tracing • Remote Debugging	• Capability to project and demonstrate tracing in Microsoft ASP.NET Web Applications. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to • Trace a Microsoft ASP.NET Web Applications • Remote Debug	Supervise the laboratory and support students in doing exercises of • Tracing • Remote Debugging	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 7	**7: Understand Validating User Input**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe : • User Input Validation • Using Validation Controls • Page Validation	To explain : • User Input Validation • Using Validation Controls • Page Validation	• Capability to project and demonstrate Validating User Input. • A comprehensive workbook of .NET Programming
	Practical Content		

	Specific Learning Outcomes	Teacher's activities	Resources
	Able to : • Define User Input Validation • Use Validation Controls • Use Page Validation	Supervise the laboratory and support students in doing exercises of • User Input Validation • Using Validation Controls • Page Validation	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming
Week 8	**8: Understand creating User Controls**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe the process of : • Adding User Controls to an ASP.NET Page • Creating User Controls	Explain how to: • Add User Controls to an ASP.NET Page • Create User Controls	• Capability to project and demonstrate creating User Controls. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Able to • Add User Controls to an ASP.NET Page	Supervise the laboratory and support students in doing exercises of	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual

	• Create User Controls	• Adding User Controls to an ASP.NET Page • Creating User Controls	Studio.NETProgramming
Week 9	**9: Describe accessing Relational Data Using Microsoft Visual Studio .NET**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe the steps of • Creating a Connection to the Database • Displaying a DataSet in a List-Bound Control	Remind students of the ADO.NET learning outcomes from BSD-303 Explain how to: • Create a Connection to the Database • Display a DataSet in a List-Bound Control	• Capability to project and demonstrate accessing Relational Data Using Microsoft Visual Studio .NET. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Able to • Create a Connection to the Database • Display a DataSet in a List-Bound Control	Supervise the laboratory and support students in doing exercises of • Creating a Connection to the	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

		Database • Displaying a DataSet in a List-Bound Control	
Week 10	**10: Describe accessing data with Microsoft ADO.NET**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe the steps of • Connecting to a Database • Accessing data with DataSets • Using Multiple Tables • Accessing Data with DataReaders	Remind students of the ADO.NET learning outcomes from BSD-303 Explain how to: • Connect to a Database • Access data with DataSets • Use Multiple Tables • Access Data with DataReaders	• Capability to project and demonstrate accessing data with Microsoft ADO.NET. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Able to • Connect to a Database • Access data with DataSets	Supervise the laboratory and support students in doing exercises of • Connecting to a	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual

	• Use Multiple Tables • Access Data with DataReaders	Database • Accessing data with DataSets • Using Multiple Tables • Accessing Data with DataReaders	Studio.NETProgramming
Week 11	**11: Illustrate calling Stored Procedures with Microsoft ADO.NET**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe the steps of • Defining Stored Procedures • Calling Stored Procedures	Explain how to: • Define Stored Procedures • Call Stored Procedures	• Capability to project and demonstrate . calling Stored Procedures with Microsoft ADO.NET • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Able to • Define Stored Procedures • Call Stored Procedures	Supervise the laboratory and support students in doing exercises of • Defining Stored Procedures • Calling Stored Procedures	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

<table>
<tr><td rowspan="6">Week 12</td><td colspan="3">12: Understand Reading and Writing XML Data</td></tr>
<tr><td colspan="3">Theoretical Content</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Teacher’s activities</td><td>Resources</td></tr>
<tr><td>To be able to describe
• XML Architecture In ASP.NET
• XML and the DataSet Object
• Working with XML Data
• Using the XML Web Server Control</td><td>To explain :
• XML Architecture In ASP.NET
• XML and the DataSet Object
• Wworking with XML Data
• Using the XML Web Server Control</td><td>• Capability to project and demonstrate Reading and Writing XML Data.
• A comprehensive workbook of .NET Programming</td></tr>
<tr><td colspan="3">Practical Content</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Teacher’s activities</td><td>Resources</td></tr>
<tr><td>The ability to :
• Work with XML Data
• Use the XML Web Server Control</td><td>Supervise the laboratory and support students in doing exercises of
• Working with XML Data
• Using the XML Web Server Control</td><td>• Computer loaded with appropriate Visual Studio .NET compiler
• A comprehensive workbook of Visual Studio.NETProgramming</td></tr>
<tr><td>Week</td><td colspan="3">13: Explain consuming and Creating XML Web Services</td></tr>
</table>

13	*Theoretical Content*		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to describe: • Using XML Web Services • Calling a Web Service Using HTTP • Using a Proxy to Call an XML Web Service • Creating an XML Web Service	Explain How to : • Use XML Web Services • Call a Web Service Using HTTP • Use a Proxy to Call an XML Web Service • Create an XML Web Service	• Capability to project and demonstrate consuming and Creating XML Web Services. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	The ability to • Use XML Web Services • Call a Web Service Using HTTP • Use a Proxy to Call an XML Web Service • Create an XML Web Service	Supervise the laboratory and support students in doing exercises of • Using XML Web Services • Calling a Web Service Using HTTP • Using a Proxy to Call an XML Web Service • Creating an	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

		XML Web Service	
Week 14	**14: Illustrate managing State**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to describe: • State management • Session and Application Variables • Cookies and Cookieless Sessions	To explain : • State management • Session and Application Variables • Cookies and Cookieless Sessions	• Capability to project and demonstrate managing State. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to : • Use and manage Session and Application Variables • Use and manage Cookies and Cookieless Sessions	Supervise the laboratory and support students in doing exercises of • Using and managing Session and Application Variables • Using and managing Cookies and Cookieless	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

		Sessions	
Week 15	**15: Explain configuring, Optimizing, and Deploying a Microsoft ASP.NET Web Application**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able describe • Using Cache Object • Using ASP.NET Output Caching • Configuring an ASP.NET Web Application • Deploying an ASP.NET Web Application	To explain how to : • Use Cache Object • Use ASP.NET Output Caching • Configure an ASP.NET Web Application • Deploy an ASP.NET Web Application	• Capability to project and demonstrate configuring, Optimizing, and Deploying a Microsoft ASP.NET Web Application. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to • Use Cache Object • Use ASP.NET Output Caching • Configure an ASP.NET Web Application • Deploy an ASP.NET Web Application	Supervise the laboratory and support students in doing exercises of • Using Cache Object • Using ASP.NET Output Caching • Configuring an	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

		ASP.NET Web Application • Deploying an ASP.NET Web Application	
Week 16	**16: Demonstrate securing a Microsoft ASP.NET Web Application**		
	Theoretical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	To be able to describe : • Web Application Security • Working with Windows-Based Authentication • Working with Forms-Based Authentication • Microsoft Passport Authentication	To explain : • Web Application Security • Working with Windows-Based Authentication • Working with Forms-Based Authentication • Microsoft PassportAuthentication	• Capability to project and demonstrate securing a Microsoft ASP.NET Web Application. • A comprehensive workbook of .NET Programming
	Practical Content		
	Specific Learning Outcomes	**Teacher's activities**	**Resources**
	Be able to • Work with Windows-Based Authentication • Work with Forms-Based	Supervise the laboratory and support students in doing exercises of • Working with	• Computer loaded with appropriate Visual Studio .NET compiler • A comprehensive workbook of Visual Studio.NETProgramming

	Authentication	Windows-Based Authentication • Working with Forms-Based Authentication	

Subject	Internet Security	**Course Code**	NT318	**Theoretical**	4 hrs / wk
Semester	Six	**Prerequisite**	NT320	**Practical**	0 hrs / wk

General Objective:

Awareness and understanding of the following issues and the ability to apply this understanding to develop a computing style - as a user, developer, manager, consumer and voter - that balances security and risk

Program Learning Component

Week 1-2

1. Security problems in Computing

Specific Learning Outcomes	Resources	Practical
- The risks involved in computing . - The goals of secure computing: confidentiality, integrity, availability - The threats to security: interception, interruption, modification, fabrication . - Controls available to address these threats: encryption, programming controls, operating systems, network controls, administrative controls, law and ethics.	-Data show -Smart board -white board	

Week 3

2. Elementary Cryptography

Specific Learning Outcomes	Resources	Practical
-Concepts of Encryption -Cryptanalysis -Symmetric (secret key) encryption - DES,	-Data show -Smart board	

	AES algorithms -Asymmetric (public) encryption - RSA algorithm . -Digital Signatures	-white board	
Week 4-5	**3. Program Security**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Programming errors with security implications - Malicious code - viruses, worms, Trojan horses - Program development controls against malicious code and vulnerabilities - software engineering principles - Controls to protect against program flaws in execution	-Data show -Smart board -white board	
Week 6	**4. Protection in general-purpose Operating Systems**		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Protection features provided by general purpose operating systems -Controlled access to objects User authentication	-Data show -Smart board -white board	
Week 7	**5. Database Security**		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Integrity for databases -Security for databases: access control, inference and aggregation	-Data show -Smart board -white board	
Week	**6. Security in Networks**		

8-9	Specific Learning Outcomes	Resources	Practical
	-Threats against networked applications: denial of service, web site defacements, malicious mobile code, and protocol attacks. -Controls against network attacks -Firewalls: design, capabilities, limitations -Intrusion detection systems -Private email	-Data show -Smart board -white board	

Week 10	7. Administering Security		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Security planning -Risk analysis -Security policies -Physical security	-Data show -Smart board -white board	

Week 11	8. Legal, Privacy, and Ethical Issues in Computer Security		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Patents, Copyrights and Trademarks -Computer crime -Privacy -Codes of professional ethics	-Data show -Smart board -white board	

Week 12	9. Forensic Analysis and Packet Filtering		
	Specific Learning Outcomes	**Resources**	**Practical**
	-TCP/IP layering -TCP/IP Packet structures -IP, TCP, UDP, ICMP	-Data show -Smart board -white board	

	-Reading packet using ASCII table - Port number and services		
Week 13	**10.Forensic Analysis and Packet Filtering**		
	Specific Learning Outcomes	**Resources**	**Practical**
	What Makes Communication Secure Network Security Standards Access Control Methods Perimeters and Gateways Web Attacks and Internet Vulnerabilities Data Navigation Protocols The Fragile Web		
Week 14	**11.Wireless Network Security**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Today's Wireless Infrastructure Encouraging Diversity Physical Layer Wireless Attacks	-Data show -Smart board -white board	

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
20	20	60

NOTE: Course Work may include assignments, projects and practical activities.

لـغة إنجليزية 6

Subject	English Language 6	**Course Code**	NT365	**Theoretical**	2hrs / wk
Semester	Six	**Prerequisite**	NT364	**Practical**	0 wk

Program Learning Component	
Week 1	**1.** **Food: fuel and pleasure.** **Grammar:** 1.1. Present simple & continuous, action and non-action verbs. 1.2. Vocabulary: 1.3. Food and pleasure.
Week 2	**2.** **If you really want to win, cheat.** **Grammar:** 2.1. Past tenses: simple, continuous, and perfect. 2.2. Vocabulary: • Sport
Week 3	**3.** **We are family.** **Grammar:** 3.1. Future forms: going to, present continuous, will/ shall. 3.2. Vocabulary: • Family, personality. • Each other or reflexive pronouns.
Week 4	**4.** 4.1. Practical English: Introductions 4.2. Writing Describing person. 4.3. Exercises in class
Week 5	**5.** **Ka- ching!** **Grammar:** 5.1. -Present perfect and past simple. 5.2. Vocabulary: • Money, phrasal verbs.

Week 6	**6.**
	Changing your life. **Grammar:** 6.1. -Present perfect continuous. 6.2. Vocabulary: • Strong adjectives.
Week 7	**7.**
	Race to the sun. **Grammar:** 7.1. -Comparatives and superlatives. 7.2. Vocabulary: • Transport and travel • How long+ take.
Week 8	**8.**
	Midterm Exam
Week 9	**9.**
	9.1. Writing: 9.2. Telling stories. 9.3. Revising and checking.
Week 10	**10.**
	Modern manners. **Grammar:** 10.1. Must, have to, should (obligation) 10.2. Vocabulary: • Mobile phones.
Week 11	**11.**
	Judging by appearances. **Grammar:** 11.1. Must, may, might, can't (deduction) 11.2. Vocabulary: • Describing people
Week 12	**12.**
	If at first you don't succeed **Grammar:** 12.1. Can, could, be able to (ability and possibility) 12.2. Vocabulary: • Ed/ ing adjectives
Week 13	**13.**
	13.1. Writing:

	13.2.	An informal letter.
	13.3.	Revising and checking.
Week 14	**14.**	
	14.1.	Revision

Course Assessment:

Course Work	Mid-Term Exams	Final Examination
20	30	50

NOTE: Course Work may include assignments, projects and practical activities.

Textbooks: New English File

التقارير الفنية بالإنجليزية 2

Subject	Technical documentation 2	**Course Code**	NT301	**Theoretical**	2hrs / wk
Semester	Six	**Prerequisite**	NT300	**Practical**	0 wk

Program Learning Component	
Week 1	**1.** 1.1. The development of the paragraph: 1.2. -paragraph support & development. 1.3. -Writing concluding sentences.
Week 2	**2.** 2.1. - Peer editing. 2.2. -Using linking words 2.3. - Exercise (Writing a topic in class)
Week 3	**3.** 3.1. Descriptive & process Paragraph: 3.2. -Descriptive paragraphs and reasons for writing them. 3.3. -Organizing and writing descriptive paragraphs using adjectives and prepositions.
Week 4	**4.** 4.1. - Process paragraphs and reasons for writing them. 4.2. -Using transition words to write a process paragraph. 4.3. - Exercise (Writing a topic in class)
Week 5	**5.** 5.1. Writing reports 5.2. - Different types of reports 5.3. - Stages in report writing
Week 6	**6.** 6.1. -Terms of reference 6.2. - Planning your report 6.3. - Collecting information
Week 7	**7.** 7.1. Midterm Exam

Week 8	**8.** 8.1. Organizing information 8.2. -Structuring your report. 8.3. -Exercise (writing a part of a report)
Week 9	**9.** 9.1. -Style of writing 9.2. -Layout 9.3. - Presentation
Week 10	**10.** 10.1. Redrafting and checking
Week 11	**11.** 11.1. Exercise (writing report in a class)
Week 12	**12.** 12.1. Exercise (writing report in a class)
Week 13	**13.** 13.1. Exercise (writing report in a class)
Week 14	**14.** 14.1. Exercise (writing report in a class)

Course Assessment:

Course Work	Mid-Term Exams	Final Examination
20	30	50

NOTE: Course Work may include assignments, projects and practical activities.

Textbooks:

1- Handbook for Technical Writing, by James H. Shelton, published in 1994 USA.
2- Academic Writing from paragraph to essay. by Lisa A Rumisek. Published in 2005 MACMILLAN.

الفصل الدراسى السابع

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT 410	Business Process Modeling	4	3	3	IT312
IT 412	Fundamentals Of Software Engineering.	4	4	0	IT312
IT 414	Mobile Applications / Android	4	3	3	IT 212
IT 470	Project Management	4	3	3	None
CT 436	Research Methods	2	2	0	None

Subject	Business Process Modeling	**Course Code**	IT410	**Theoretical**	3 hrs / wk
Semester	Seven	**Prerequisite**	IT312	**Practical**	3 hrs / wk

General Objective:

- To introduce ecommerce with Business, Technology & Social perspective
- Examine the relationship of basic e-business strategies to business success. Understanding of the end to end technological infrastructure to establish & support e-commerce
- Understanding of ecommerce marketing concepts and how important they are for the success of any ecommerce site
- Overview of some of the commercial ecommerce systems

Program Learning Component

Week 1	**12. Introduction to E-commerce**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Definition of e-commerce, e-business with associated practical aspects and differences - Features which are unique to e-commerce technology - Different types of e-commerce - Origin & Growth of the Internet and the Web - Understanding E-commerce	-Data show -Smart board -white board	
Week	**13. E-commerce business models and concepts**		

2	Specific Learning Outcomes	Resources	Practical
	-Detailed discussion & understanding of e-commerce models -Impact of Internet and World Wide Web on businesses, strategy, structure, and associated processes.	-Data show -Smart board -white board	
Week 3	**14. Technology Infrastructure of E-commerce**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Key technology concepts including Internet Protocol (IP), Internet Back Bone, Network Access Points, Metropolitan Area Networks, Application Service Providers, Intranets and extranets	-Data show -Smart board -white board	
Week 4-5	**15. Planning and designing an E-commerce website**		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Planning, Systems analysis and design In-house vs. outsourcing – details, differences, cost impact & associated advantages & disadvantages of both options System Testing, Implementation, Maintenance & optimization factors of the website Concept & understanding E-commerce merchant server Choosing the right hardware & server software for e-commerce site • Application servers including sizing of hardware platform considering the business plan & associated supply/demand - Other e-commerce site development tools - Interactive tools	-Data show -Smart board -white board	

	- Java, JSP, and JavaScript - ActiveX and VBScript - Personalization tools		
Week 6-7	**16. Security and Encryption**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Understanding of e-commerce related security environment, threats & technology based solutions includes - Protecting & securing channels of internet communications - Encryption - Secure socket layers (SSL(- Digital Signatures - Protecting networks using different types of Firewalls - Protecting servers and clients using OS controls/Anti-virus software	-Data show -Smart board -white board	
Week 8	**17. Ecommerce Payment Systems**		
	Specific Learning Outcomes	**Resources**	**Practical**
	Introduction of Payment Systems involved in e-commerce Credit-card e-commerce transactions Other types of payment methods Digital payment in B2C Electronic billing	-Data show -Smart board -white board	
Week 9	**18. Ecommerce Marketing Concepts**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Basic marketing concepts	-Data show	

	- Internet marketing technologies - Search engine marketing - E-commerce Marketing and Branding Strategies - Tools to measure website traffic	-Smart board -white board	
Week 10	**19. Ecommerce and Communications**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Online advertising, Online catalogs, Online chat - Direct email marketing - Benefits of online marketing communications - The cost of online advertising - Ethical, Social and Political issues in ecommerce	-Data show -Smart board -white board	
Week 11-12	**20.Social, Legal, and Ethical Issues of e-Commerce**		
	Specific Learning Outcomes	**Resources**	**Practical**
	-Impact of e-commerce on society -Legal/policy issues in e-commerce -Electronic Transactions Ordinance -Prevention of Electronic Ordinance	-Data show -Smart board -white board	
Week 13-14	**21.Auctions, Portals, and Communities**		
	Specific Learning Outcomes	**Resources**	**Practical**
	- Benefits of auctions - Risks and costs of auctions - The growth and evolution of portals	-Data show -Smart board -white boar	

	- Types of portals - Online communities/social networks		

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10%	30%	20%	40%

NOTE: Course work may include assignments, projects and practical activities.

Textbooks:

1-E-Commerce 2009: Business, Technology, and Society by Kenneth Laudon and Carol Guercio Traver

2-Electronic Commerce 2010. A managerial prespective, Turban ISBN13: 978-0-13-703465-9

3- E-Commerce 2009: International Version, 5/E Kenneth Laudon, Carol Guercio Traver, ISBN-13: 9780135027141

Subject	Fundamentals Of Software Engineering.	**Course Code**	IT412	**Theoretical**	4 hrs / wk
Semester	Seven	**Prerequisite**	IT312	**Practical**	0 hrs / wk

General Objectives

This is a central course, presenting the basic principles and concepts of software engineering and giving firm foundation for many other courses in the field. It gives broad coverage of the most important terminology and concepts in the software engineering.

Program Learning Components

	Specific Learning Outcomes	Resources	Practical
Week 1	**Introduction to Software:** basic understanding of software life cycle, software processes, requirements engineering processes; introduction to agile and extreme programming, basic modeling and design; basic of project management, software cost estimation, configuration management, and testing.	-Data show -Smart board -white board	
	Specific Learning Outcomes	**Resources**	**Practical**
Week 2	**Software Requirements Engineering:** The requirements Engineering Process - Elicitation of requirements - Functional and non-functional requirements - System services and constraints – Quality of	-Data show -Smart board -white board	Students participate in a group project on software requirements engineering

	Requirements - Requirements traceability matrix - Metrics for non-functional requirements - Use case description - Use case and context diagrams - Software Requirements Specification -IEEE Standard - Requirements for agile developments - Requirements for various systems: embedded systems, web-based systems, business systems, etc. – Requirements management		
Week 3	**Specific Learning Outcomes**	**Resources**	**Practical**
	Object-Oriented Software Engineering: Review of Object-Oriented Concepts– More modeling with UML: Structural Modeling, Behavioral Modeling – System architecture design, – User Interface Design – Object Persistence Design - Class and Method Design - Object-Oriented Testing.	-Data show -Smart board -white board -case study description.	Students participate in a group project on object-oriented software engineering
Week 4	**Specific Learning Outcomes**	**Resources**	**Practical**
	Software Design and Architecture: Introduction to software design and architecture – Software evolution, flexibility – Introduction to design patterns, multi-layer architecture, Client-Server, the Model-View-Controller, etc. - The Object-oriented and function-oriented pipelining – Control styles, the centralized and event-driven models - Software design and the reuse landscape - Components technology - Application frameworks - Middleware architectures..	-Data show -Smart board -white board	Students participate in a group project on software design and architecture
Week	**Specific Learning Outcomes**	**Resources**	**Practical**

5	**Software Quality Assurance:** Quality concepts – Software quality assurance - Software quality management - Quality planning and control – Quality manual – Product and process standards - Internal and external software quality attributes - Software reviews, walkthrough and inspection – Statistical software quality assurance – Software configuration management - Software reliability – International Software quality models, e.g. ISO 9000 Quality standards and ISO 9000-3, etc.. – Software process improvement – The Capability Maturity Model (CMM), Balanced scorecards		Students participate in a group project on Software quality assurance
Week 6	**Specific Learning Outcomes**	**Resources**	**Practical**
	Software Testing: Introduction to testing - Software validation and verification – Test cases – Managing the testing process: developing test plans, test scripts and test cases, reports - Unit, functional, and acceptance testing - Black-box and white-box testing - Equivalence partitioning - Path testing – Integration testing – System Testing: Regression testing; Interface testing; Stress testing; Incremental testing; Interaction and Usability testing ... etc. - Object-oriented testing - Software testing tools - Alpha, beta, and user acceptance testing – Testing in agile development environment - Automated testing.	-Data show -Smart board -white board -case study	Students participate in a group project on software testing
Week	**Specific Learning Outcomes**	**Resources**	**Practical**

7	**Software Engineering Project:** Project planning, cost estimation, earned-value analysis techniques and scheduling. Project management tools. Factors influencing productivity and success. Productivity metrics, Analysis of options, risk management and dynamic adjusting of project plans. Planning for change. Management of expectations. Release and configuration management. Software process standards and process implementation. Using standards in project management, including ISO10006 (project management quality) and ISO12207 (software development process). Software contracts and intellectual property. Approaches to maintenance and long-term software development.	-Data show -Smart board -white board	Case studies of real industrial projects.
Week 8	**Specific Learning Outcomes**	**Resources**	**Practical**
	Software Measurements and Metrics: Measurements and metrics in software industry – Measurements of product, process and resource attributes – Planning a measurements program - Goal/Question/Metric - Collection and analysis of software empirical measurements - Building software metrics - Cost estimation models, Function points, and Use case points – Measurements and metrics of object oriented software: Coupling and cohesion – Tools for software measurements – Benchmarking.		Students participate in a group project on Software Measurements and Metrics
Week	**Specific Learning Outcomes**	**Resources**	**Practical**

9	**Software Engineering Tools & Methods:** The objective of this course is to guide students to understand and use different models, tools, and computer-aided software engineering, techniques, methodologies in developing application systems. This course introduces the students to different types of software development life cycles, new trends in Methodologies and programming: RAD, Prototyping, Agile, eXtreme .... etc. The considerations involved in choosing which methodology to use. Examples and cases will be drawn from actual systems projects that enable students to learn in the context of solving problems	-Data show -Smart board -white board	
	Specific Learning Outcomes	**Resources**	**Practical**
Week 10	**Software Maintenance:** Students will study the four types of maintenance: corrective, adaptive, perfective, and preventive maintenance; economic implications of maintenance; managerial issues related to system maintenance such as maintenance organizational structure; quality measurement, processes related to change requests and configuration management. Topics including: Website maintenance; role of CASE tools; reverse engineering, reengineering; code restructuring and amenability measures. Students will also learn different maintenance process models such as: Boehm, Osborne, Iterative enhancement and reuse-oriented	-Data show -Smart board -white board	

	modes.		
Week 11	**Specific Learning Outcomes**	**Resources**	**Practical**
	Web Applications Engineering how Web Engineering differs from software engineering, detailing the rapid prototyping and agile development methods mandated by short lead times, emphasis on interactivity and multimedia, and the increased importance of user interfaces and human-computer interaction. It covers: the systematic development of Web applications; requirement engineering for Web applications; modeling; Architectures of Web Applications; technology driven design; testing, operation and maintenance of Web applications. Special emphases should be given to: Web project management, development processes, usability, performance and security of Web applications.	-Data show -Smart board -white board	
Week 12	**Specific Learning Outcomes**	**Resources**	**Practical**
	Embedded Systems Design: An introduction to embedded system design - complex systems and microprocessors - The embedded design process - Formalism for system design - Introduction to instruction sets, CPUs, I/O – The Embedded computing platform – Program design and Analysis in an embedded system – Embedded operating systems – Coprocessors	-Data show -Smart board -white board	

	Specific Learning Outcomes	Resources	Practical
Week 13	**Managing people:** People in the process-management activity-motivating people-personality type –group working-group leadership – staff selection factors	-Data show -Smart board -white board	
	Specific Learning Outcomes	**Resources**	**Practical**
Week 14	**Software Re-engineering:** System re-engineering – business process re-engineering –re-engineering approaches – source code translation – reverse engineering – program structure improvement restructuring problems- data re-engineering	-Data show -Smart board -white board	

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10%	30%	20%	40%

NOTE: Course work may include assignments, projects and practical activities.

Textbooks:

1. Ian Sommerville: "Software Engineering", 7th edition, Addison-Wesley, 2005.
2. Roger S. Pressman: "Software Engineering, a Practitioner's Approach", Sixth Edition; McGraw-Hill; 2005 .
3. Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich : "Modern Systems Analysis and Design"; Fourth Edition; Pearson Education, Inc.; 2005.
4. Stephen Schach, "Classical and Object-Oriented Software Engineering", 7/e, Vanderbilt University, McGraw-Hill, 2007.
5. Ralph Moseley: "Developing Web Applications"; John Wiley, 2006
6. Axel van Lamsweerde: "Requirements Engineering: from System Goals to UML Models to Software Specifications"; John Wiley 2007

7. Lethbridhge T., Lagraniere R., Object Oriented Software Engineering (using UML and Java), 2nd edition, McGraw-Hill, 2005.
8. J. W. Horch: “Practical Guide to Software Quality Management”, Artech House Publishers, 2003.
9. Dorothy Graham, Erik van Veenendaal, etal: “Foundations of Software Testing"; Thomson Learning; 2007
10. Pat Hall and Juan Fernandez-Ramil: “Managing the Software Enterprise”, Thomson Learning; 2007
11. 2.S.H. Kan: “Metrics and Models in Software Quality Engineering”, second ed., Addison-Wesley, 2002

تطبيقات الهواتف الذكية/ Android

Subject	Mobile Application/Android	**Course Code**	IT 414	**Theoretical**	3 hrs / wk.
Semester	Seven	**Prerequisite**	IT212	**Practical**	3 hrs / wk.

Objective:

This course is intended to show students (with Java Programming background) how to build real-world and fun mobile apps using the new Android SDK 4 (Ice Cream Sandwich), which unifies Gingerbread for smartphones.

Exploring Android's core building blocks and APIs in depth and learning how to create compelling apps that work on a full range of Android devices is the main objective of the course.

The course also covers sensors, Maps, alarms, native development, multi-touch screen, 2D graphics, and many other topics.

Week 1	**Topic 1: General Introduction** 1. Introduction to the course content, Instructor, Lab supervisor and passing requirements. 2. Introduction to Android Platform 3. Early History of Android 4. Android Software Stack
Week	**Topic 2: Development Environment**

2	1. Developing an End-User Application with SDK 2. Android Emulator 3. Android User Interface 4. Foundational components 5. Android JAVA Packages
Week 3	**Topic 3: Development Environment** 1. Setting Up The Environment 2. Downloading (JDK6 , Eclipse 3.6, Android SDK 3. Installing Android Development tools 4. Learning Fundamental Components
Week 4	**Topic 4: Activities** 1. Hello World 2. Virtual Devices 3. Running on Real Devices. 4. The Structure of Mobile Application 5. Application Life Cycle 6. Simple Debugging 7. Lunching the Emulator
Week 5	**Topic5 : Understanding Resources** 1. String Resources 2. Layout Resources 3. Defining one own Recourse IDs for later use. 4. Enumerating Android key resources 5. Working with Assets 6. Reference URLs

Week 6	**Topic 6: Content Providers** 1. Android Content URLs 2. Android MIME Types 3. Using Android Curser 4. Using where Clause 5. Inserting Records 6. Updates and Deletes 7. Implementing the Query, Insert, Update and delete method.
Week 7	**Topic 7: Building User Interface** 1. Building UI in code. 2. Building UI in XML 3. Text Control , Button Control 4. ImageView Control 5. Date and Time Control 6. The MapView control 7. Basic List Control , GridView Control 8. Using Styles and Themes
Week 8	**Topic 8: Working with Menus** 9. Create a menu 10. Using Icon Menus, Context Menu and Dynamic menus. 11. Loading Menus Through XML files 12. Structure of an XML Menu Resource file. 13. Mid Term Examination
Week 9	**Topic 9: Exploring Security and Premissions** 14. Discussion of Mid-term Exam Results. 15. Understanding Android security Model

	16. Declaring and using Permissions 17. Custom Permissions 18. Using URI Permissions
Week 10	**Topic 10: The Alarm Manager**
	19. Getting Access to Alarm Manager 20. Creating a receiver for the Alarm 21. Setting the Alarm 22. Cancelling the Alarm 23. Working with Multiple Alarms 24. Test Project
Week 11	**Topic 11: Exploring 2D Animation**
	25. Planning frame by frame animation 26. Adding Animation to the Activity 27. Basic Tweening Animation Types 28. Animating the List View 29. Basic View Animation
Week 12	**Topic 12: Location-Based Services and sensors**
	30. Understanding the Mapping Package 31. Obtaining a Maps API Key from Google. 32. Adding Markers using Overlays 33. Geocoding with Android 34. Interpreting Sensor Data 35. Light Sensor, Proximity sensor, Temperature sensor,, Gyroscope sensor and Accelerometers.
Week 13	**Topic 13: Using Telephony APIs**
	36. Working with SMS Messages

	37. Monitoring Incoming SMS Messages 38. Working with SMS Folder 39. Working with Telephony Manager
Week 14	**Topic: Media Framework and Touch Screen**
	40. Using the Media APIs 41. Playing Audio Video Content 42. Exploring Audio Video Recording 43. The Motion Event Object 44. Using Velocity Tracker 45. Basics of Mulitouch Application 46. The Gestures Builder

Course Assessment:

Mid Term Exam	Lap Activities	Final Practical Exam	Final Written Exam
20%	20%	20%	40%

Textbook:

1. "Pro Android 4" by Satya Komatineni, Dave MacLean, ISBN: 978-1-4302-3930-7.

Reference Book:

1. "Beginning Android 4" by Grant Allen, Mark Murphy. Publisher Apress. ISBN: 978-1-4302-3984-0.

Note to student: Free download at: http://it-ebooks.info/book/659/

or contact CCTT Library to get a free DVD e-book Code (IT 414).

إدارة المشـــاريع

Subject	Project Management.	**Course Code**	IT470	**Theoretical**	3 hrs / wk
Semester	Seven	**Prerequisite**	None	**Practical**	3 hrs / wk

Course Objectives

This intensive course provides the practical knowledge and hands-on exercises that are required to prepare for starting and completing a project successfully. The success of the project manager depends on his/her understanding of the competencies and structure of project management. Through discussion, facilitation and practical exercises, the course participants will understand the basic concepts of the nine areas of the project management body of knowledge (PMBOK®) during a project's lifecycle (concept, development, implementation, and termination).

Participants

Individuals from various industries directly involved in project management including Project Managers, Project Team Leaders, Team Members and other staff aspiring to become project managers.

Learning objectives

By the end of the course the participants will be able to:

- Understand the basics of the processes and relationships of the nine areas of the Project Management Body of Knowledge.
- Understand the Project lifecycle.
- Generate project requirements and determine the operational success criteria to be achieved by the project's outcome.
- Create a project Work Breakdown Structure (WBS).
- Design a project schedule with activities, duration, and interdependencies.
- Use the Critical Path Method (CPM) and the Program Evaluation and Review Technique (PERT) to create time and resource schedules.

- Develop and document a comprehensive and integrated project plan.

Course Outline

1. An introduction to the field of Project Management and its development.
2. An introduction to the Processes of the Project Management Body of Knowledge.
3. The project lifecycle.
4. Project Manager's Role – Define project manager/project sponsor/functional manager/team member roles and responsibilities and understand the impact of different organizational structures and reward/recognition strategies.
5. Document Relationships – Relate the Statement of Work (SOW), Work Breakdown Structure (WBS) and Specifications to each other.
6. Scheduling Processes – Identify activities, estimate duration, and establish logical relationships.
7. Time scheduling using CPM and PERT techniques.
8. An introduction to resource planning using CPM.
9. Project Control and Reporting.

طــرق بحثيـة

Subject	Research Methods.	**Course Code**	CT436	**Theoretical**	2 hrs / wk
Semester	Seven	**Prerequisite**	None	**Practical**	0 hrs / wk

الهدف من المادة

إن هدف هذه المادة هي تعليم الطرق العلمية الصحيحة لأساسيات البحث العلمي وكيفية كتابة التقارير العلمية ومشاريع التخرج.

الأسبوع 1	**مقدمة عن الفكر والبحث:** • مفهوم الفكر وأساليبه. • المعرفة والعلم. • مدخل في البحث العلمي ومشاريع التخرج. • شروط البحث العلمي الناجح ومشاريع التخرج.
الأسبوع 2	**التعريف بنظام المكتبة والخدمات المكتبية:** • النظم المكتبية. • تقويم المصادر والمراجع والإفادة منها. • نظام البطاقات والإعارة المؤقتة • استخدام الدوريات.
الأسبوع 3	**طرق ومناهج البحث والمشاريع العلمية:** • الطريقة التاريخية. • دراسات المسح. • دراسات الحالة. • تحليل المحتوى • الطريقة الاحصائية. • طريقة التجربة.
الأسبوع 5-4	**مراحل إعداد البحث ومشاريع التخرج:** • اختيار مشروع البحث أو المشروع. • الاطلاع على البحوث والدراسات السابقة.

	• خطة البحث العلمي ومشروع التخرج. • القراءات الأولية وتسجيل المعلومات.
الاسبوع 6	**المجتمع الإحصائي في البحوث والمشاريع:** • العينة وعلاقتها بالمجتمع الإحصائي. • طرق اختيار العينة في المجتمع الإحصائي.
الاسبوع 8-7	**عمليات جمع وتصنيف وتحليل المعلومات** • مصادر جمع البيانات • تصنيف البيانات ووسائل تبويبها. • عرض البيانات وتحليلها.
الاسبوع 10-9	**اختبارات الفرضيات في البحث والمشاريع** • الاختبارات المستندة إلى التوزيع الطبيعي. • الاختبارات المستندة الى توزيع مربع كاى • اختبارات المعنويات المستندة إلى توزيع ستورنيت T • اختبار فرضيات حول تساوي عدة أوساط حسابية.
الاسبوع 12-11	**انواع وخصائص التقارير العلمية والعملية** • أهمية التقارير العملية وأهم أهدافها وميزاتها. • أنواع التقارير وأهم استخداماتها. • خصائص التقرير الجيد.
الاسبوع 14-13	**متطلبات كتابة التقارير والبحوث والعلمية ومشاريع التخرج** • أسلوب كتابة التقارير والبحوث والمشاريع العلمية. • تنظيم صفحة العنوان والمقدمة والمحتويات. • متن التقارير او البحث وطريقة توثيق المعلومات. • الاستنتاجات والتوصيات • إعداد قائمة المصادر والملاحق.

Course Assessment:

Course Work	Mid-Term Tests	Final Examination
10	30	60

NOTE: Course work may include assignments, projects and practical activities.

Textbooks:

1. أساسيات البحث ومشاريع التخرج وكتابة التقارير في الإدارة د. علي هادي جبرين.

الفصل الدراسى الثامن

Code	Subject	Credit Hours	Theoretical Hours	Practical Hours	Prerequisite
IT 416	Professional issue	4	3	3	None
NT 403	On Field Practice	2	1	3	None
IT 444	Research Thesis	1	0	3	All Sub

Subject	Professional issue	**Course Code**	NT416	**Theoretical**	3hrs / wk
Semester	Eight	**Prerequisite**	None	**Practical**	3 hrs / wk

Course Objectives

- Be familiar with some of the issues you may face as a member of a complex technological society.
- Be able to discuss the benefits offered by computing technology in many different areas and the risks and problems associated these technologies.
- Understand some social, legal, philosophical, political, constitutional and economic issues related to computers and the historical background of these issues
- Be able to determine the impact of the privacy laws on information security policies.
- Understand the issues related to intellectual freedom, intellectual property, and copyright law as they relate to electronic publishing.
- Be able to determine and identify ethical procedures and behaviors in the organization related to information security.
- Be able to identify issues of professional conduct in information technology case studies.
- Learn the areas most impacted by ethical decisions by professionals in the computing field and will gain skills in making such decisions.
- Apply theories of ethics to case situations in the context of organizational use of information technology.
- Understand the ethical issues associated with gathering, storing and accessing

genetic information in databases.

- Recognize the differences in ethical codes of conduct in different cultures and countries.

Weeks	Topic
1-2	Introduction, Course Syllabus and Course Requirements Catalysts for Change Introduction to Ethics
3-4	Networked Communications
5	Intellectual Property
6-7	Privacy
8-9	Computer and Network Security
10-11	Computer Reliability
12	Professional Ethics
13-14	Work and Wealth
15	Discussions of papers

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10%	30%	20%	40%

NOTE: Course work may include assignments, projects and practical activities.

Textbook:

Title: Ethics for the Information Age
Author(s): Michael J. Quinn

Edition: 4th Edition
Publisher: Prentice Hall/ Pearson Education
Year: 2011

التدريـب الميداني

Subject	On Field Practice	**Course Code**	NT403	**Theoretical**	1hrs / wk
Semester	8	**Prerequisite**	None	**Practical**	3 hrs / wk

One of the requirements of Bachelor of Science Degree / Higher Diploma Degree in any major is the fulfillment of on field practice during the last term.

Objectives

1. Expose the students to real working environments
2. Involve the students with job search of the available positions relating to their specialization
3. Teach students the skills needed in a team work
4. Raise the chances of graduates to be placed in a highly paid jobs related to their field of studies
5. Improve the presentation skills of students
6. Build a strong relationship between the faculty and the private and public sectors.
7. Refine the program curriculum with the needed skills required for today's technicians and engineers obtained from the inputs of the students and the feedbacks from the facilitators.

Course Requirements

1. Class attendance: 2 hours/weekly in faculty with the instructor
2. One presentation during the semester arranged by the instructor
3. Complete a 60 hours on field job with a schedule approved by the instructor
4. Submit the *Proof of Completion Form* approved and signed by the facilitator
5. Submit a final report at the end of the semester(including one page feedback).

Guideline for Grading

As any other course, the instructor grades the students work and submit the results.

Assessed Activity	Mark %
Class attendance	10
Presentation	20
On Field attendance	20
Facilitator Observations and feedback	40
Final Report	10
Total	100%

The student will be marked as (Fail) if:

- Received less than 50 % of the total mark.
- Failed to complete one of the requirements of the course.
- Submitted a forged document.

Procedures

1. Students register for the class at the registrar office or the related departments as any other course.
2. In first class meeting, students obtains a *Contract Forms* bytheir names. They can choose from a list of participated companies or they may choose their own.
3. After job placement, students return *Contract Forms* signed by the facilitator to the instructor.
4. After a completion of 30 hours on field practice, students can give a presentation on their duties and he may invite co-workers and the facilitator to the presentation.
5. All presentations will be conducted during the class hours and students attendance is compulsory.
6. After completion field practice, the student submits the sealed*Proof of Completion From* approved and signed by the facilitator along with the student final report summarizing his experience, duties, working environment, satisfaction, learning outcomes.

General Remarks

1. Number of Forms: *Contact Formand Proof of Completion Form*
2. Students may suggest their own field practice location provided the approval of the instructor.

3. If Instructor is in doubt about the legitimacy of the company and the commitment of the student, he may pay a field visit and speaks to co-workers and the facilitator.
4. Occasional on-field visits must be stated clearly to students on the first day of classes and should be formally written in the *Contact Form*.
5. For privacy, the facilitator should seal *Proof of Completion Form*