



Faculty of: Computer and Information Technology
Department: ... CS,IT,and IS
Title of the Program: ... CS,IT,and IS..

Computer Science Fundamentals Courses Course

Specification

I. Course Identification and General Information:						
1	Course Title:	Computer Science Fundamentals				
2	Course Code & Number:					
3	Credit hours:	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2	----	2	---	3
4	Study level/ semester at which this course is offered:	First Year -First Semester				
5	Pre -requisite (if any):	N/A				
6	Co -requisite (if any):	N/A				
7	Program (s) in which the course is offered:	all				
8	Language of teaching the course:	English/ Arabic				
9	Study System	Credit hour system				
10	Mode of delivery:	Lecture based				
11	Location of teaching the course:	Faculty Computer and IT				
12	Prepared By:	Dr. Malek Naser Al-gabri				
13	Date of Approval					

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II. Course Description:

Fundamentals of Computing is designed to introduce students to the field of computer science through exploration of engaging and accessible topics. Through creativity and innovation, students will use critical thinking and problem-solving skills to implement projects that are relevant to students' lives. They will create a variety of computing artifacts while collaborating in teams. Students will gain a fundamental understanding of the history and operation of computers, programming, and web design. Students will be introduced to computing careers and will examine societal and ethical issues of computing.

III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Identify and define the key functional components (input devices, output devices, processor, operating system, software applications, memory, storage, etc.).	A1, A2, A5, A6
a.2	Understand the terms and units that are used to describe major hardware component (RAM, ROM, Peta-, Tera-, Giga-, Mega- Kilo-, Hz, Bit, Byte, Binary, etc.).	A1, A2, A5, A6
a.3	Describe how software and hardware interact.	
b.1	Discuss how and why binary is used to represent data in a computer.	B3, B6
b.2	Distinguish the appropriate Programming Languages, devices, applications and Operating system.	B2, B3
c.1	Describe how a picture, sound/song, and video are digitized and represented in a computer.	C4, C6
c.2	Evaluate hardware and software configuration to meet situational and budgetary requirements (e.g. gaming, Internet browsing, student, graphic designer, etc.).	C4, C6
d.1	Demonstrate safety skills in an office/work environment.	D1, D3
d.2	Make hardware and software recommendations to improve a computer system.	D1, D3

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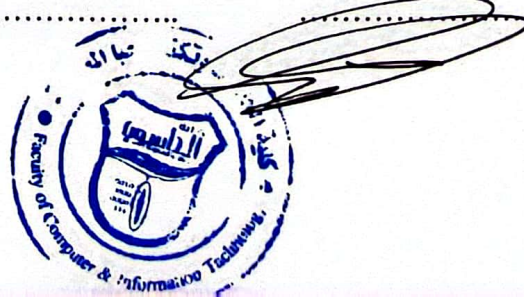
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IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Introduction to computer science	a1, a2	0.1 The Role of Algorithms 0.2 The History of Computing 0.3 An Outline of Our Study 0.4 The Overarching Themes of Computer Science	1	2
2	Data Storage	a1, a2, b1	1.1 Bits and Their Storage 1.2 Main Memory 1.3 Mass Storage 1.4 Representing Information as Bit Patterns *1.5 The Binary System *1.6 Storing Integers *1.7 Storing Fractions *1.8 Data and Programming *1.9 Data Compression *1.10 Communication Errors	1	2
3	Data Manipulation	a1, a2, b1, b2, c1, c2	2.1 Computer Architecture 2.2 Machine Language 2.3 Program Execution *2.4 Arithmetic/Logic Instructions *2.5 Communicating with Other Devices *2.6 Programming Data Manipulation *2.7 Other Architectures	1	2
4	Operating Systems	a2, b1, b2, c1, c2, d2	3.1 The History of Operating Systems 3.2 Operating System Architecture 3.3 Coordinating the Machine's Activities *3.4 Handling Competition Among Processes 3.5 Security	1	2
5	Networking and the Internet	a1	4.1 Network Fundamentals 4.2 The Internet 4.3 The World Wide Web *4.4 Internet Protocols 4.5 Security	1	2
6	Algorithms	a2, b2, c1, c2, d1	5.1 The Concept of an Algorithm 5.2 Algorithm Representation 5.3 Algorithm Discovery	1	2

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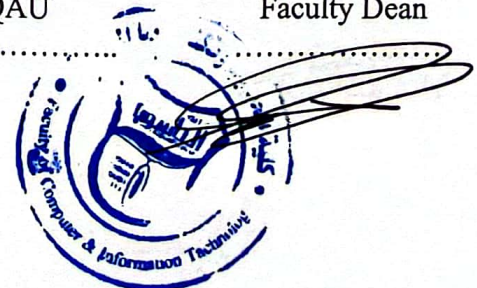
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			5.4 Iterative Structures 5.5 Recursive Structures 5.6 Efficiency and Correctness		
7	Programming Languages	a2, b1, b2, c1, c2,d2	6.1 Historical Perspective 6.2 Traditional Programming Concepts 6.3 Procedural Units 6.4 Language Implementation 6.5 Object-Oriented Programming *6.6 Programming Concurrent Activities *6.7 Declarative Programming	1	2
8	Mid exam	a2, b1, b2, c1, c2,d2	Mid exam	1	2
9	Software Engineering	a2, b1, b2, c1, c2,d2	7.1 The Software Engineering Discipline 7.2 The Software Life Cycle 7.3 Software Engineering Methodologies 7.4 Modularity 7.5 Tools of the Trade 7.6 Quality Assurance 7.7 Documentation 7.8 The Human-Machine Interface 7.9 Software Ownership and Liability	1	2
10	Data Abstractions	a2, b1, b2, c1, c2,d2	8.1 Basic Data Structures 8.2 Related Concepts 8.3 Implementing Data Structures 8.4 A Short Case Study 8.5 Customized Data Types 8.6 Classes and Objects *8.7 Pointers in Machine Language	1	2
11	Database Systems	a1, a2, b1, b2, c1, c2, d1, d2	9.1 Database Fundamentals 9.2 The Relational Model *9.3 Object-Oriented Databases *9.4 Maintaining Database Integrity *9.5 Traditional File Structures 9.6 Data Mining 9.7 Social Impact of Database Technology	1	2
12	Computer Graphics	a1, a2, c2	10.1 The Scope of Computer Graphics 10.2 Overview of 3D Graphics 10.3 Modeling 10.4 Rendering *10.5 Dealing with Global Lighting 10.6 Animation	1	2
13	Artificial Intelligence	a2,b2,d1	11.1 Intelligence and Machines 11.2 Perception 11.3 Reasoning 11.4 Additional Areas of Research		2

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			11.5 Artificial Neural Networks 11.6 Robotics 11.7 Considering the Consequences	1	
14	Theory of Computation	a2,b2,d1	12.1 Functions and Their Computation 12.2 Turing Machines 12.3 Universal Programming Languages 12.4 A Noncomputable Function 12.5 Complexity of Problems *12.6 Public-Key Cryptography	2	4
15	Final exam		Final exam		
Number of Weeks /and Units Per Semester				16	32

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Computer History, Fundamentals, and Operating Systems	1	2	a1, b1
2	System Components, Input/output Devices, and Storage Devices	1	2	a1, a2,b1
3	Use windows OS to Manage Files, Programs and to Browse the Internet	2	4	a1, a2, b2, c1
4	Concepts: Windows Explorer File Management, Privacy, and Security	1	2	a1, a2, b2, c1, c2
5	Using Word Documents and Features,	1	2	a1, a2, b2, c2
6	Resumes, Cover Letters, Research Papers, Newsletters, and Merged Address Labels with Word	1	2	a1, a2, b2, c1
7	Excel Worksheets, Charts, Formulas, Functions, and Tables	1	2	a1, a2, b1, c1
8	Excel Pie Charts, Line Charts, and What-If Analysis Tools	1	2	a1, a2, b1, c1
9	PowerPoint Presentation Creation; Enhancing Presentations with Pictures, Transitions, Objects, Backgrounds, and Smart	2	4	a1, a2, b2
10	Create, Query, and Sort an Access Database; Create Forms and Reports	2	4	a1, a2, b1, b2, c1, c2

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11	The Internet and World Wide Web	1	2	a1, a2, b1, b2, c1, c2, d1, d2
12	final exam	1	2	a1, a2, b1, b2, c1, c2, d1, d2
Number of Weeks /and Units Per Semester 16			32	

V. Teaching strategies of the course:

Class Lectures
Lab-based courses
Problem solving

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Homework 1	a.1,a.2,b.1	3	2.5
2	Homework 2	a.1,a.2,b.1,b.2	6	2.5
3	Homework 3	b.1,b.2,c.1,c.2,	9	2.5
4	Homework 4	c.1,c.2,d.1,d.2	12	2.5
5	Total			10

VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assessment	3,6,9,12	10	%10	a.1, a.2, b.1, b.2, c.1, c.2, c.3
2	Mid-term Exam	7~9	20	%20	a.1, a.2, b.1, b.2, c.1, c.2
3	final lab exam	15	10	%10	a.1, a.2, b.1, b.2, c.1, c.2, d1, d.2
4	Final- Exam	16	60	%70	a.1, a.2, b.1, b.2, c.1, c.2, d1, d.2
5	Total		100	100%	

VIII. Learning Resources:

- Written in the following order: (Author - Year of publication - Title - Edition - Place of publication - Publisher).

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1- Required Textbook(s) (maximum two).	
	1- computer-science-an-overview-12 th 2- Computer Concepts (Computer Concepts and Applications) by Densie Seguin – January 30, 2013
2- Essential References.	
	1- Discovering Computers: Tools, Apps, Devices, and the Impact of Technology Misty E. Vermaat 20 2- Introduction to Computers [6 ed.], Peter Norton's, 2006 An Introduction to Computer Studies , Noel Kalicharan, 2003
3- Electronic Materials and Web Sites etc.	
	1- https://study.com/academy/topic/basic-computer-concepts.html

IX. Course Policies:	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • students are allowed one absence without a required written excuse for every semester credit hour taken. • For all students who exceed the specified amount of unexcused absentees, an official documented excuse from the university may be required by the instructor • It is the student's responsibility and entitlement to meet and discuss all absences or planned absences with their instructors. • All students must notify the Office of Student Affairs/Judicial Affairs for any emergencies that require immediate exemption from university grounds within a period of 48 hours. • No student shall neglect more than 20% of their class attendance, whether excused or unexcused, in a given semester. • Upon the prudence and judgment of the instructor, a course grade of "FA" may be given to any student who exceeds 25% of absentees in a semester. • The Office of Student Affairs/Judicial Affairs is officially responsible for issuing class excuses for legitimate purposes. • Once a student reaches approximately ten to fifteen percent of absentees in a class, he/she shall receive a warning. • The Chair of the respective program has the right to permit a student's withdrawal from a course, if presented with a suitable and acceptable explanation for excessive absentees. This will be coordinated and is with the consent of the Registrar.
2	<p>Tardy:</p> <ul style="list-style-type: none"> • -If a student is tardy three times to class, it is automatically counted as an absence. Each instructor is responsible to define the rules for which a student is considered late to class.

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3	Exam Attendance/Punctuality: <ul style="list-style-type: none">- All students have to attend exam as specified.Student who fails to attend the exam has to bring documented reasonsAll students must come to exam on time and no excuses are accepted for late coming.
4	Assignments & Projects: <ul style="list-style-type: none">All assignment and projects have to be submitted, as scheduled, on time.Late submission causes deduction of marks.
5	Cheating: <ul style="list-style-type: none">All students are required and are expected to act and behave according to the Academic Integrity Code and Standards of Conduct as explained and detailed in the student handbook. Punitive actions for any and all students not abiding by these rules is also outlined in the student handbook.Any student caught in the act of or is suspected of cheating will automatically receive a grade of "0" for that exam, quiz, project, or assignment and be suspended from the university for the semester period.Any recurring attempt in cheating will be a matter for immediate dismissal from the University.Any student who assists, contributes, or in any way is found to be involved in helping another student cheat will receive an equivalent and equal penalty.
6	Plagiarism: <ul style="list-style-type: none">Regulations will be pursued and enforced on any plagiarism attempts.
7	Other policies: <ul style="list-style-type: none">-

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