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الجمهورية اليمنية
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وحدة ضمان الجودة

Course Specification of Computer Programming

Course No (...................)

2020/2021

I.	Course Identification and General Information:	
1	**Course Title:**	Computer Programming

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Assoc. Prof. Mansour N. Ali	Dr. Anwar Al-Shamiri	Dr. Nagi Al-Shibani	Assoc. Prof. Dr.Huda Al.Emad

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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:	2nd year – 1st Semester				
5	Pre –requisite (if any):	Programming Fundamentals				
6	Co –requisite (if any):	None				
7	Program (s) in which the course is offered:	CS				
8	Language of teaching the course:	English/Arabic				
9	Study System	Term based system				
10	Mode of delivery:	Full Time				
11	Location of teaching the course:	Faculty of Computer and Information Technology				
12	Prepared By:	Dr. Musa Ghurab				
13	Date of Approval					

II.   Course Description:

This course provides a continuing introduction to computer programming. It considers problems drawn from a variety of domains, and emphasizes both the broader applicability of the relevant data structures and programming concepts, as well as the implementation of those structures and concepts in software. Topics include: multi-dimensional arrays, characters and string; pointers, references, functions, files, and debugging and testing.

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III. Course Intended learning outcomes (CILOs) of the course (maximum 8CILOs)		Referenced PILOs (Only write code number of referenced Program Intended learning outcomes)
a1.	Demonstrate knowledge of computer programming concepts	A1, A5
a2.	Realize different structure in the programming language.	A3
b1.	Identify the essential concepts of Programming Techniques.	B1
b2.	Analyze simple programming problems.	B4
c1.	Use the programming language in the implementation of application programs that illustrate professionally acceptable coding and performance standards, with debugging techniques.	C1, C2
c2.	Write moderate-sized (100–300 line) programs incorporating a variety of control and data structures	C3
d1.	Work effectively both in a team and independently	D1

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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a1- Demonstrate knowledge of computer programming concepts	Lectures Tutorials	Assignments, Exams, Quiz
a2- Realize different structure in the programming language.	Lectures Tutorials	Assignments, Exams, Quiz

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Identify the essential of the concepts of Programming Techniques.	Lectures Tutorials	Assignments, exams, experimental write tech reports, project reports
b2- Analyze simple programming problems.	Lectures Tutorials Lab Problem solving	Assignments, exams, experimental write tech reports, project reports

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1- Use the programming language in the implementation of application programs that illustrate professionally acceptable coding and performance standards, with debugging techniques.	Lectures Tutorials problem solving	Mid-term exam Final exam Quiz

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	case study Lab	Small project
c2- Write moderate-sized (100–300 line) programs incorporating a variety of control and data structures	Lectures Tutorials problem solving case study Lab	Mid-term exam Final exam Quiz Small project

(D) **Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:**

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Work effectively both in a team and independently	Working in group	Small project

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Arrays	a1, a2, b1, b2, c2	Array definition (multi-dimensional array). Array searching, sorting, and rotation.	2	4
2	Characters and Strings	a1, a2, b1, c1, c2	Array of characters String definition.	1	2

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			String operations.		
3	Pointers	a2, b1, b2, c1, c2	What is pointer. Use of pointer. Pointer operations. Understand the close relationships between pointers and built-in arrays.	2	4
4	References	a2, b1, b2, c1, c2	What is Reference. Use of Reference. Reference operations. Similarities and differences between pointers and references.	2	4
5	Functions	a1, a2, b1, b2, c1, c2	Introduction. Library Functions. Function Definitions with Multiple Parameters. Function Prototypes and Argument Coercion. Standard Library Headers. Storage Duration. Scope Rules. Function Call Stack.	4	8

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			Functions with Empty Parameter Lists. Inline Functions. References and Reference Parameters. Default Arguments. Function Overloading. Function Templates Recursion.		
6	File Processing	a1, a2, b1, b2, c1, c2	Introduction. Files and Streams. Creating a Sequential File. Reading Data from a Sequential File. Updating Sequential Files. Random-Access Files. Creating a Random-Access File. Writing Data Randomly to a Random-Access File. Reading from a Random-Access File Sequentially.	2	4
7	Debugging and Testing program	a2, b1, b2, c1	Introduction. Tracing code.	1	2

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			Testing and finding code bug.		
Number of Weeks /and Units Per Semester				14	28

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Array (multi-dimensional array). Searching, sorting, rotation. Character array. Strings, Strings operations. (Testing/Debugging).	2	4	a1, a2, b1, b2, c2
2	Pointers. Pointers operations. (Testing/Debugging).	3	6	a2, b1, b2 c1, c2
3	References. References operations. (Testing/Debugging).	2	4	a2, b1, b2 c1, c2
4	Functions. Types of functions/parameters/arguments/etc. (Testing/Debugging).	4	8	a1, a2, b1, b2, c1, c2

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5	File Processing. (Testing/Debugging).	2	4	a1, a2, b1, b2, c1, c2
Number of Weeks /and Units Per Semester		13	26	

V. Teaching strategies of the course:

- Lectures
- Tutorials
- Problem solving
- Lab
- Case study
- Small project

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Design algorithm to solve simple problem using arrays	a2, b2, c1, c2	3rd	1
2	Write simple program (using: Strings, Pointers, References)	a2, b2, c1, c2	6th	2
3	Write simple program (using: functions).	a2, b2, c1, c2	13th	2
4	Design and Implement small project.	a1, a2, b1, b2, c1, c2, d1	15th	5

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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	Assignments	3rd, 6th, 13th	5	5%	a2, b2, c1, c2
2	Small project	15th	5	5%	a1, a2, b1, b2, c1, c2, d1
3	Lab exams	8th, 15th	20	20%	a1, a2, b1, b2, c1, c2, d1
4	Mid Term Exam	8th	10	10%	a1, a2, b1, b2, c1, c2
5	Final Exam	16th	60	60%	a1, a2, b1, b2, c1, c2

VIII. Learning Resources:

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

1- Required Textbook(s) (maximum two).

1. Deitel & Deitel, 2017, "*C++ How to Program*", Tenth Edition, Pearson Education.

2. D. S. Malik, 2018, "*C++ programming from Problem Analysis to Program Design*", Eighth Edition, Cengage Learning.

2- Essential References.

1-Stanley B Lippman; Josée Lajoie; Barbara E, 2013, "*C++ PRIMER*",5th Edition,

Addison-Wesley

3- Electronic Materials and Web Sites *etc*.

1-http://www.cplusplus.com/

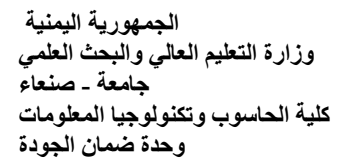| Head of Department	Vise Dean for Qulity Assurance	Dean of the Faculty	Dean of Development center and Quality Assurance
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	2-https://www.w3schools.com/cpp/

IX.	**Course Policies:**

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: ----------------------------------- The University Regulations on academic misconduct will be strictly enforced. Please refer to -----------

1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic
2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class, he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6	**Plagiarism:** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7	**Other policies:**

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	- Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments my given directly to students using soft or hard copy

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Faculty of Computer & Information Technology

Department of Computer Science

Program of Computer Science

Course Syllabus of Computer Programming

Course No   (...................)

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Template for Course Plan (Syllabus)

I. - Information about Faculty Member Responsible for the Course:

Name of Faculty Member		Office Hours					
		SAT	SUN	MON	TUE	WED	THU
Location& Telephone No.							
E-mail							

II. Course Identification and General Information:

1-	**Course Title:**	Computer Programming					
2-	**Course Number & Code:**	…………					
3-	**Credit hours:**		**C.H**				**Total**
			Th.	Seminar	Pr.	F. Tr.	
			2	-	2	-	3
4-	**Study level/year at which this course is offered:**	2nd Level– 1st Semester					
5-	**Pre –requisite (if any):**	Programming Fundamentals					
6-	**Co –requisite (if any):**	None					
7-	**Program (s) in which the course is offered**	CS					
8-	**Language of teaching the course:**	English					
9-	**System of Study:**	Term based system					
10-	**Mode of delivery:**	Full Time					

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11-	Location of teaching the course:	Faculty of Computer and Information Technology

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IV. Intended learning outcomes (ILOs) of the course:

	• Brief summary of the knowledge or skill the course is intended to develop:
a1.	Demonstrate knowledge of computer programming concepts
a2.	Realize different structure in the programming language.
b1.	Identify the essential concepts of Programming Techniques.
b2.	Analyze simple programming problems.
c1.	Use the programming language in the implementation of application programs that illustrate professionally acceptable coding and performance standards, with debugging techniques.
c2.	Write moderate-sized (100–300 line) programs incorporating a variety of control and data structures
d1.	Work effectively both in a team and independently

V. Course Content:

	• Distribution of Semester Weekly Plan of Course Topics/Items and Activities.

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A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Arrays	$1^{st}, 2^{nd}$	4
2	Characters and Strings	3rd	2
3	Pointers	$4^{th}, 5^{th}$	4
4	References	$6^{th}, 7^{th}$	4
5	Mid-term Exam	8th	2
6	Functions	$9^{th} - 12^{th}$	8
7	File Processing	$13^{th}, 14^{th}$	4
8	Debugging and Testing program	15th	2
9	Final Exam	16th	2
Number of Weeks /and Units Per Semester		**16**	**32**

B – Practical Aspect: *(if any)*

Order	Topics List	Week Due	Contact Hours
1	Array (multi-dimensional array).	$1^{st}, 2^{nd}$	4

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	Searching, sorting, rotation. Character array. Strings, Strings operations. Testing/Debugging.		
3	Pointers. Pointers operations. Testing/Debugging.	3rd-5th	6
4	References. References operations. Testing/Debugging.	6th ,7th	2
5	Mid-term exam	8th	2
6	Functions. Types of functions/parameters/arguments/etc. Testing/Debugging.	9th -12th	8
7	File Processing. Testing/Debugging.	13th ,14th	4
8	Final- exam	15th	2
Number of Weeks /and Units Per Semester		**15**	**30**

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VI. Teaching strategies of the course:

- Lectures
- Tutorials
- Problem solving
- Lab
- Case study
- Small project

VII. Assignments:

No	Assignments	Week Due	Mark
1	Design algorithm to solve simple problem using arrays	3rd	1
2	Write simple program (using: Strings, Pointers, References)	6th	2
3	Write simple program (using: functions).	13th	2
4	Design and Implement small project.	15th	5

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

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments	3rd, 6th, 13th	5	5%
2	Small project	15th	5	5%

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3	Lab exams	8th, 15th	20	٢٠%
4	Mid Term Exam	8th	10	10%
5	Final Exam	16th	60	60%

IX. Learning Resources:

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

1- Required Textbook(s) (maximum two).

1. Deitel & Deitel, 2017, "*C++ How to Program*", Tenth Edition, Pearson Education.

2. D. S. Malik, 2018, "*C++ programming from Problem Analysis to Program Design*", Eighth Edition, Cengage Learning.

2- Essential References.

1-Stanley B Lippman; Josée Lajoie; Barbara E, 2013, "*C++ PRIMER*",5th Edition, Addison-Wesley

3- Electronic Materials and Web Sites *etc*.

1-http://www.cplusplus.com/

2-https://www.w3schools.com/cpp/

X. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Computer and Information Technology apply. For the policy, see: ----------------------------------
The University Regulations on academic misconduct will be strictly enforced. Please refer to -----------

1	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic

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2	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	**Assignments & Project** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6	**Plagiarism:** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7	**Other policies:** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments my given directly to students using soft or hard copy

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م.	الاســــم	الصـــــــفة	التوقيع
			اللجنة الإشرافية
١	أ.م.د. عبد الماجد الخليدي	نائب عميد الكلية للشؤون الأكاديمية	
٢	أ.م.د. احمد مجاهد	نائب عميد مركز التطوير الأكاديمي وضمان الجودة	
٣	د. حسين الأشول	ممثل المركز في الكلية	
٤	أ.د. إبراهيم المطاع	نائب رئيس الجامعة للشؤون الأكاديمية	

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