هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

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Course Specification

Course Title:	**Programming Fundamentals**
Course Code:	**CS0115**
Program:	**Computer Science (Cybersecurity- Programming- Networks)**
Department:	**Applied Sciences**
College:	**Applied College**
Institution:	**Imam Muhammad Bin Saud Islamic University**
Version:	*Course Specification Version Number*
Last Revision Date:	**8 October 2024**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	3 (2 Theory, 2 Lab)				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	Level 1				
4. Course general Description: This course includes a set of topics that represent an introduction to the study of programming science, including talking about the nature of programming of all kinds and its role in the field of informatics and methods of thinking in solving problems by studying algorithms and the basics of sequential programming that constitute the core of the component units of any program. Throughout the semester, the course includes an integrated case study in which all previous tools are used to build an integrated project.					
5. Pre-requirements for this course (if any): None					
6. Co- requirements for this course (if any): None					
7. Course Main Objective(s): The course aims to give the student the basics of programming science to be able to propose solutions to problems so that they are valid for formulation in the form of a computer program and the ability to write programs in the Java language to solve problems and solve some simple problems.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	48	100 %
2.	E-learning		
3.	Hybrid ● Traditional classroom ● E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	24
2.	Laboratory/Studio	24
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	48

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Knowledge of programming languages concepts.	K1, K2, K5	- Class lectures - Class Discussion - Questions/Answers - Sessions in class - Homework - Assignments - Quizzes - Case studies and Analysis.	- Quizzes - Homework and Assignments. - Written exams (Midterm and final). - Writing reports
1.2	Classification of programming languages according to their uses and levels.	K1, K2, K5		
1.3	Comparison between types of programming languages.	K1, K2, K5		
1.4	Demonstrate the software development life cycle.	K1, K5		
1.5	Familiarity with the concept of algorithm, its types, methods of representation, and the types of problems that are solved by it.	K1, K5		
1.6	Knowledge of the Java development environment.	K1, K5		
1.7	Knowledge of the components of Java language and the rules for writing them.	K1, K2, K5		

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.1	Tracking the stages of the software development life cycle for its production.	S1, S2, S3, S4, S5, S7	- Class lectures - Class Discussion - Questions/Answers - Sessions in class - Homework - Assignments - Quizzes - Case studies and Analysis.	- Quizzes - Homework and Assignments. - Written exams (Midterm and final). - Writing reports
2.2	Solving problems using algorithms.	S1, S2, S6, S7		
2.3	Mastering the basic components and stages of programming.	S1, S2, S4, S5, S7		
2.4	Converting sequential algorithms into a Java program.	S1, S2, S3, S4, S5, S6, S7		
2.5	Write a simple sequential program in Java.	S1, S2, S3, S4, S5, S7		
2.6	Using information and communication technology in communication, exchange of ideas, scientific research, and performance of tasks.	S1, S2, S7		
2.7	Practicing critical thinking and solving problems facing the learner in the course in creative ways.	S1, S2, S7		
2.8	Develop and implement scripts and programs using compound conditions and loops in order to automate the tasks of a software system to solve given problems.	S1, S2, S3, S4, S5, S7		
2.9	Develop and implement secure and reliable programs taking into account the characteristics of operating systems and environments.	S1, S2, S3, S4, S5, S7		

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Collaboration, teamwork, and professional ethics.	V1	- Class lectures - Class Discussion - Questions/Answers - Sessions in class - Homework - Assignments - Quizzes - Case studies and Analysis.	- Quizzes - Homework and Assignments. - Written exams (Midterm and final). - Writing reports
3.2	Take responsibility for continuous learning and continuing personal development.	V2		
3.3	Effective and efficient time management when applying the acquired knowledge and skills.	V3		

C. Course Content

No	List of Topics	Contact Hours
1	● **Programming Concepts:** ○ Programming Terms ○ Programming Languages ○ Levels Of Programming Languages ▪ Low Level ▪ High Level ○ Fundamentals of Software Development ○ Software Design Principles and Practices	8
2	● **Basic Data Structures and Algorithms** ○ Definition of Algorithms ● Example Of Algorithms ○ Representing Algorithms ● Pseudo-code ● Flow chart ○ Basic Logical Operations ○ Statements and Expressions ○ Precedence of Operators ○ Sequential and Parallel Execution (Control structure) ● Sequential Logic Structure ● Selection/ Decision Logic structure ● Repetition/Loop Logic structure (Simple Loop, Multiple/Nested Loop) ○ Counter ○ Grosses ○ Automatic Counter Loop	16
3	● **Introduction To Java Language**	20

	○ Objective Of Developing Java ○ Java Language Editions ○ Java Language Features ○ Java Programming Tools ○ What We Need To Start With Java? ○ Scripting on Windows and Linux ○ Compilers. ○ Debugging Techniques ○ Bugs/ Errors ○ The basic structure of Java code. ○ Components of the Java language: ▪ Language Rules. ▪ Reserved words. ▪ Methods and Classes ▪ Data Types ○ Primitive ○ Non-Primitive ▪ Variables and constants. ▪ Statements ○ Declaration Statements ○ Comment Statements ○ Output Statements ▪ Escape Characters	
4	• **From Algorithms To Java Program Code** ▪ Examples	4
Total		48

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	Week 7	20%
2.	Quizzes (2 Quizzes)	All Semester	10%
4.	Assignments	All Semester	10%
3.	Participation	All Semester	5%
5.	Practical Evaluation (*(Individual submission)*	All Semester	15%
6.	Group Project	Week 12	10%
7.	Final Exam	Week 13	30%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Java™ Programming: From Problem Analysis to Program Design (Introduction to Programming) by D. S. Malik, 5th Edition.
Supportive References	- Deitel P.J., Deitel H.M. - Java. How to Program, 10th Edition - Problem Solving and Programming Concepts by Maureen Sprankle and Jim Hubbard, 9th Edition.
Electronic Materials	Online resources will be provided during class lectures.
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Computer lab
Technology equipment (projector, smart board, software)	Data Show, Smart Board, NetBeans software, Edraw Max software
Other equipment (depending on the nature of the specialty)	-

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Indirect using course evaluation survey
Effectiveness of students assessment		
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey
The extent to which CLOs have been achieved		
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	