



# Course Specification

## — (Bachelor)

Course Title: Programming Fundamentals

Course Code: 181CIS-3

Program: Programming and Database

Department: Computer department

College: Applied college

Institution: Najran university

Version: TP -153- 2024

Last Revision Date: 2 OCT 2024

## Table of Contents:

<b>A. General Information about the course</b>	<b>3</b>
<b>2. Teaching mode</b> (mark all that apply)	<b>4</b>
<b>3. Contact Hours</b> (based on the academic semester)	<b>4</b>
B. Course Learning Outcomes (CLOs), Teaching Strategies and <b>Assessment Methods</b>	<b>4</b>
C. Course Content	<b>5</b>
<b>D. Student Assessment Activities</b>	<b>7</b>
E. Learning Resources and Facilities	<b>7</b>
<b>1. References and Learning Resources</b>	<b>7</b>
<b>2. Required Facilities and Equipment</b>	<b>8</b>
F. Assessment of Course Quality	<b>8</b>
G. Specification Approval Data	<b>8</b>

## A. General information about the course:



### 1. Credit hours: (2+1)

### 2. Course type

A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input checked="" type="checkbox"/> Required			<input type="checkbox"/> Elective	

### 3. Level/year at which this course is offered: ( .....)

### 4. Course General Description:

This course is about Computer Programming Fundamentals using python programming language. It includes Understand fundamental terms and definitions, Understand Python's logic and structure, literals and variables, operators and data types, Input/Output console operations, decisions and flow. This course is essential for obtaining the professional certificate PCEP (PCEP-30-02), and updated periodically according to the certificate exam

### 5. Pre-requirements for this course (if any):

None

### 6. Co-requisites for this course (if any):

None

### 7. Course Main Objective(s):

This course is intended to:

- Provide students with a good understanding of concepts and terminology related to the Computer Programming using Python Language.
- Enable students to translate the real computing problems into a programs that solve it.

- Develop the programming skills and experience needed to write Python language programs.
- Enable students to communicate with others effectively to solve real computing Problems.

## 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	4 hours per week	95%
2.	E-learning		5%
3.	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4.	Distance learning		100%

## 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

## 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	Define the basic concepts of programming language, algorithm,	K1	Lecturers Labs	Exam Quiz Assignment



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	flowchart, and program structure.			
1.2	Understand the language syntax, statements, and derived data types	K3	Lecturers Labs	Exam Quiz Assignment
1.3	Write python programs	K3		
2.0	Skills			
2.1	Design programs to solve problems	S1	Lecturers Labs	Exam Quiz Assignment
2.2	Write flowcharts to understand the program modules	S1	Lecturers Labs	Exam Presentation
...	fix errors in python programs	S1		
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate projects and assignments in teamwork for designing and developing python programs	V3	Project Small report group	Presentation
3.2				
...				

### C. Course Content

No	List of Topics	Contact Hours
	Computer Programming and Python Fundamentals: (18% of exam – 7 exam items )	
1	Understand fundamental terms and definitions <ul style="list-style-type: none"> <li>interpreting and the interpreter, compilation and the compiler</li> </ul>	6





	<ul style="list-style-type: none"> <li>lexis, syntax, and semantics</li> </ul>	
2	<p>Understand Python's logic and structure</p> <ul style="list-style-type: none"> <li>keywords</li> <li>instructions</li> <li>indentation</li> <li>comments</li> </ul>	4
3	<p>Introduce literals and variables into code and use different numeral systems</p> <ul style="list-style-type: none"> <li>Boolean, integers, floating-point numbers</li> <li>scientific notation</li> <li>Strings</li> <li>binary, octal, decimal, and hexadecimal numeral systems</li> <li>variables</li> <li>naming conventions</li> <li>implementing PEP-8 recommendation</li> </ul>	10
4	<p>Choose operators and data types adequate to the problem</p> <ul style="list-style-type: none"> <li>numeric operators: <code>**</code> <code>*</code> <code>/</code> <code>%</code> <code>//</code> <code>+</code> <code>-</code></li> <li>string operators: <code>*</code> <code>+</code></li> <li>assignment and shortcut operators</li> <li>unary and binary operators</li> <li>priorities and binding</li> <li>bitwise operators: <code>~</code> <code>&amp;</code> <code>^</code> <code> </code> <code>&lt;&lt;</code> <code>&gt;&gt;</code></li> <li>Boolean operators: <code>not</code>, <code>and</code>, <code>or</code></li> <li>Boolean expressions</li> <li>relational operators ( <code>==</code> <code>!=</code> <code>&gt;</code> <code>&gt;=</code> <code>&lt;</code> <code>&lt;=</code> )</li> <li>the accuracy of floating-point numbers</li> <li>type casting</li> </ul>	9
5	<p>Perform Input/Output console operations</p> <ul style="list-style-type: none"> <li>the <code>print()</code> and <code>input()</code> functions</li> <li>the <code>sep=</code> and <code>end=</code> keyword parameters</li> <li>the <code>int()</code> and <code>float()</code> functions</li> </ul>	6
6	Mid Term Exam	1
	Control Flow – Conditional Blocks and Loops: (29% of exam – 8 exam items)	
7	<p>Make decisions and branch the flow with the <code>if</code> instruction</p> <ul style="list-style-type: none"> <li>conditional statements: <code>if</code>, <code>if-else</code>, <code>if-elif</code>, <code>if-elif-else</code></li> <li>multiple conditional statements</li> <li>nesting conditional statements</li> </ul>	12
8	Perform different types of iterations	12





	<ul style="list-style-type: none"> <li>the pass instruction</li> <li>building loops with while, for, range(), and in</li> <li>iterating through sequences</li> <li>expanding loops with while-else and for-else</li> <li>nesting loops and conditional statements</li> <li>controlling loop execution with break and continue</li> </ul>	
Total		60

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	8	20%
2.	Homework's	From 3 to 14	10%
3.	Practical exam	15	20%
4	Final exam	16	50%

\*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	Python Essentials - Part 1 (Basics) <a href="https://edube.org/study/pe1">https://edube.org/study/pe1</a>
Supportive References	The Python Language Reference <a href="https://docs.python.org/3.11.3/">The Python Language Reference — Python 3.11.3 documentation</a>
Electronic Materials	<a href="https://www.python.org/doc/">https://www.python.org/doc/</a>
Other Learning Materials	





## 2. Required Facilities and equipment

Items	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<b>Classroom with a suitable size for students</b>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<b>Whiteboard/projector</b>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<b>None</b>

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	<b>Direct: Questioners</b>
Effectiveness of students assessment	Teacher Audit and review committees	Direct: CW & HW Exercises and short quizzes Projects Mid and final paper exams.
Quality of learning resources	Teachers and course description committees	Indirect: Benchmarking Self-evaluation External evaluation
The extent to which CLOs have been achieved	Teacher	Direct: Measuring the learning outcomes
Other		

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

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data

<b>COUNCIL /COMMITTEE</b>	
<b>REFERENCE NO.</b>	
<b>DATE</b>	

