

**Title (Units):** COMP1015 Computing for Creatives I (3,2,1)

**Course Aims:** This course aims to prepare the students with computing skills which are essential for creative and interactive applications. The key programming concepts and their application in physical computing will be covered. After completion of this course, students should have acquired and established the knowledge necessarily to develop a creative interactive prototype.

**Prerequisite:** Nil

**Course Intended Learning Outcomes (CILOs):**

Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	<b>Knowledge</b>
1	Describe the fundamental principles and high-level concepts of programming.
2	Describe the basic principles of interactive applications.
3	Make use of physical computing elements to develop creative interactive applications.
4	Integrate and apply the knowledge learnt to develop creative interactive prototypes..

**Calendar Description:** Computing skills can enable innovations in areas like creative arts and health and wellness to design creative outputs and interactive applications and prototypes by leveraging variety of microcontroller boards, as well as the sensory and controller units. This course aims to prepare the students with computing skills which are essential for creative and interactive applications. The key programming concepts and their application in physical computing will be covered. After completion of this course, students should have acquired and established the knowledge necessarily to develop a creative interactive prototype.

**Teaching and Learning Activities (TLAs):**

CILOs	Type of TLA
1-4	Students will learn the fundamental principles and high-level concepts of programming through lectures.
1-4	Students will gain hands on experience and apply the learnt principle on programming through lab sessions as well as lab exercises.
1-4	Students will learn how innovations can be enabled by computing and be required to develop a creative interactive project by integrating the knowledge and skills learnt from lectures and lab sessions for the project development

**Assessment:**

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	40%	1-4	1. There are lab exercises for practising concepts covered in the lectures. 2. Students will be required to complete assignments on specified topics. Assessment will be based on technical competence, creativity, and user experience of the final product. 3. Students will be required to work on a group project. Marks are given to the originality and novelty of the creative design, the elegance and completeness of the final implementation.
2	Workshop Project	30%	3-4	The projects are designed to evaluate the students' principle understanding of the course content.
3	Examination	30%	1-4	There will a final examination covering the essential concepts of general programming and physical computing.

**Assessment Rubrics:**

<b>Excellent (A)</b>	<ul style="list-style-type: none"> <li>• Student can understand all fundamental principles and high-level concepts of programming</li> <li>• Student can demonstrate an excellent interactive project with novelty and creativity</li> </ul>
<b>Good (B)</b>	<ul style="list-style-type: none"> <li>• Student can understand most of the fundamental principles and high-level concepts of programming</li> <li>• Student can demonstrate a good interactive project with solid integration of knowledge and programming principles learnt in class</li> </ul>
<b>Satisfactory (C)</b>	<ul style="list-style-type: none"> <li>• Student can understand some of the fundamental principles and high-level concepts of programming</li> <li>• Student can demonstrate an interactive project with some levels of integration and creativity</li> </ul>
<b>Marginal Pass (D)</b>	<ul style="list-style-type: none"> <li>• Student can understand few of the fundamental principles and high-level concepts of programming</li> <li>• Student can demonstrate an interactive project with elementary level of integration and creativity</li> </ul>
<b>Fail (F)</b>	<ul style="list-style-type: none"> <li>• Student completely does not understand any principles and high-level concepts of programming</li> <li>• Student cannot demonstrate any interactive project</li> </ul>

**Course Content and CILOs Mapping:**

Content		CILO No.
I	General Programming Concepts	1-2
II	Physical Computing	1-3
III	Creative Interactive Applications	1-4

**References:**

- Simon, Programming the Raspberry Pi, third edition: Getting Started with Python, 3rd ed. Columbus, OH: McGraw-Hill Education, 2021.
- P. Desai, Python Programming for Arduino. Birmingham, England: Packt Publishing, 2015.
- B. Manaris and A. R. Brown, Making Music with Computers: Creative Programming in Python. Philadelphia, PA: Chapman & Hall/CRC, 2014.

**Course Content:**

**Topic**

- I. General Programming Concepts
  - A. Basic programming syntax
  - B. Variables and data types
  - C. Operators and expressions
  - D. Control structures
  - E. Functions
  
- II. Physical Computing

- A. Working with microcontroller boards such as Raspberry Pi and Arduino
  - B. Interfacing with devices such as sensors and motors
- III. Creative Interactive Applications
- A. Applications in Creative Arts
  - B. Applications in Health and Well-being