Course Syllabus

1. Course Code COMP103-nanosatellites
2. Credits 6 (3 + 3 + 8) (LECT + LAB + SELF)
3. Course Name Basic Computer Programming for Nanosatellites Development
4. Year Q1 2023
5. Duration 5 weeks
6. Instructors Atom, Pop
7. Assistants Neil, Gino
8. Prerequisites -
9. Hours per week Video content: 3 hours, Lab: 3 hours
10. Contents

    Microcontrollers components and interactions, signals, waveforms, basic electronics and hardware connectivity, hardware usages, control systems, system state programming, hardware communication, interconnection, communication interfaces and protocols, wired communication, wireless communication, memory interactions, compatibility, sensors and modules.
11. Level -
12. Contents: This course consists of 2 modules: basic programming and hardware. Each module takes 2 weeks (4 periods, 3 hours each). See next page for weekly contents.

Module 1: Introduction & Basic C/C++ Programming

Week(P)	Content	Activity
1(1)	**Part A**: Introduction, processors, microcontrollers, hardware interactions, C/C++ programming language, software similarity. (Brief) **Part B**: Basic C/C++ (Any) Programming, Program Flow, Data Types, Variables, Arithmetic Operations, I/O, Includes.	Practice Problems and Lab
1(2)	**Conditional** Operators, Conditional Expressions, Selection Statements and Control Flow: if, else if, else, switch-case, break, continue.	
2(1)	**Repetition**: while, do-while, for loops; Static Arrays, Array Iteration.	Practice Problems and Lab
2(2)	**Functions**: Declaration & Body, void & non-void function, Arguments and Return Value, Overloading, Typecasting.	

Module 2: Basic Python Programming and Ground Control Station

Week(P)	Content	Activity
3 - 4	1. Introduction, I/O, Data Types, Variables, Operators, Expressions, IDEs 2. Basic String, List and String, List Operations 3. Selection statement: if-elif-else statement 4. Repetition (loop): for, while, break, continue + Nested loop 5. List and Dictionary Essentials	Practice Problems and 2 Labs
5	Ground Control Station Software Usages	Showcase and Demonstration