Course Syllabus

Course Number	SCME 211
Course Title	Computer Programming and Simulation
Credits	3 Credits (3-0-6)
Faculty	Faculty of Science
Semester/Year	Second / 2023
Hours/Date/Time	3 Hours / Tuesday / 1:30 PM – 4:30 PM
Instructor	Dr. Chaiwoot Boonyasiriwat (chaiwoot@gmail.com)
Course Web Page	http://mcsc.sc.mahidol.ac.th/courses/cps/
Degree	Bachelor of Science (Materials Science and Nano Engineering)
Teaching Methods	Lecture and in-class exercise
Media	Presentation slides and programming demonstration
Assignments	Assignments will be assigned every week and due within one week

Learning Outcomes   Student should

- be able to describe basic programming concepts such as variables, data types, program controls, arrays, data inputs and outputs, functions, class and object
- be able to write computer programs for solving problems

Evaluation

- Assignments	30%
- Class attendance and participation	10%
- Term project	30%
- Examinations	30%

Grading   Letter grades will be assigned based on the total score percentage of each student according to the following table

Score Percentage Range	Letter Grade
[80,100]	A
[75,80)	B+
[70,75)	B
[65,70)	C+
[60,65)	C
[55,60)	D+
[50,55)	D
[0,50)	F

References

📖 M.L. Hetland, 2017, Beginning Python: From Novice to Professional, Third Edition, Apress.

📖 P. Deitel and H. Deitel, 2020, Intro to Python for Computer Science and Data Science, Pearson.

📖 https://www.w3schools.com

Tentative Course Schedule

Week	Date	Topics
1	Jan 9	Computer system, number systems and conversion, flowchart
2	Jan 16	Introduction to Python, data types, variables, arithmetic and assignment operators
3	Jan 23	Built-in functions, user-defined functions
4	Jan 30	Comparison and logical operators, if-else statements
5	Feb 6	Arrays and collections
6	Feb 13	Loops, for and while statements
7	Feb 20	Graph plotting, Matplotlib module
8	Feb 27	Reading and writing files
9	Mar 12	Object-oriented programming
10	Mar 19	Inheritance
11	Mar 26	Polymorphism
12	Apr 2	NumPy module
13	Apr 9	SciPy module
14	Apr 23	Keras module
15	TBA	Project presentation

TBA = to be announced