**Course Syllabus**

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| **CNU International Summer Session** |

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| **Course Title** | | | **Computational Thinking for Engineering: Programming with Python** | | | | | | | | | | | | | | | | | | |
| **Course Type** | | | Lecture and Practices | | | | | | | | **Credits**  **(hours)** | | | 3 | | | | | | | |
| **Department** | | |  | | | | | | | | **Professor** | | | CHING-MING CHAO | | | | | | | |
| **Classification**  **(year in school)** | | | Undergraduate | | | | | | | | **Course Code** | | |  | | | | | | | |
| **Class room** | | |  | | | | | | | | **E-mail** | | | cmchao@scu.edu.tw | | | | | | | |
| **Prerequisite(s)** | | | none | | | | | | | | | | | | | | | | | | |
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| **Course objectives** | | | Python is currently one of the most widely used programming languages as well as the most popular programming language for artificial intelligence and big data. Students taking this course are not required to have any programming experiences. Starting from the fundamental, the objective of this course is to let students learn programming with Python. After the completion of this course, students should have the ability to write programs in Python. | | | | | | | | | | | | | | | | | | |
| **Course Summary** | | | 1. Introduction to Computing and Problem Solving 2. Basic Concepts: Core Objects, Variables, Input, and Output 3. Control Structures 4. Functions 5. Processing Data 6. Object-Oriented Programming | | | | | | | | | | | | | | | | | | |
| **Teaching Methods** | | | **Teaching Methods** | | | | | | | | | | | | | | | | | | |
| Lecture | Presentation/Discussion | | | | Problem Based Learning | | | | Project Based Learning | Flipped Learning | | | Experiment/ Practices | | | | Others  (Describe) | |
| **√** | **√** | | | |  | | | |  |  | | | **√** | | | |  | |
| **Grading** | | | Mid-Term | Final | | Individual Tasks | | | Team Projects | | | Class participation | | | Attendance | | Others  (Describe) | | | | **Total** |
| **25%** | **25%** | |  | | | **25%** | | | **25%** | | |  | |  | | | | **100%** |
| ※ Pursuant Section 28 of the Guidelines on Class Management, grading methods can be adjusted for the physically impaired.  ※ Under Section 29 of the University Regulations on Academic Affairs, a student automatically fails a course in case of failure to attend more than 3/4 classes. (More than four(4) times absence) | | | | | | | | | | | | | | | | | | |
| **Accommodations for Handicapped** | | | - Visually impaired: provision of course related materials in audio, note taking helper, permission to record the lecture  - Audibly impaired: provision of course related materials in visual, note taking helper, permission to have e-learning lectures in sign language or shorthand  - Physically or mentally challenged: provision of course related materials, note taking helper, permission to record the lecture   * Any other requests that are considered necessary: provision of assisted   ingress and egress to the classrooms and other supports | | | | | | | | | | | | | | | | | | |
| **Textbooks & References** | | | | | | | | | | | | | | | | | | | | | |
| Category | Title | | | | Author | | | | | | | Publisher | | | | | | | Year of publication | | |
| Main textbook | An Introduction to Programming Using Python | | | | David I. Schneider | | | | | | | Pearson | | | | | | | 2016 | | |
| Others |  | | | |  | | | | | | |  | | | | | | |  | | |
| Reference |  | | | | | | | | | | | | | | | | | | | | |
| **Daily Course Schedule** | | | | | | | | | | | | | | | |
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| **Day**  **(3hurs)** | **Lecture Topic** | **Hours per day** | **Method of Instruction** | **Class Materials & Assignments** |
| 1 | Introduction to Computing  Program Development Cycle  Introduction to Python | 3 | Lecture & Practices | Ch 1.1, Ch 1.2, Ch 1.4 |
| 2 | Numbers  Strings | 3 | Lecture & Practices | Ch 2.1, Ch 2.2 |
| 3 | Output  Lists  Tuples | 3 | Lecture & Practices | Ch 2.3, Ch 2.4 |
| 4 | Introduction to Files  Relational and Logical Operators | 3 | Lecture & Practices | Ch 2.4, Ch 3.1 |
| 5 | Decision Structures | 3 | Lecture & Practices | Ch 3.2 |
| 6 | The while Loop | 3 | Lecture & Practices | Ch 3.3 |
| 7 | Midterm Exam | 3 | Written Exam | Ch 1.1 ~ Ch 3.3 |
| 8 | The for Loop | 3 | Lecture & Practices | Ch 3.4 |
| 9 | Functions (Basic) | 3 | Lecture & Practices | Ch 4.1 |
| 10 | Functions (Advanced) | 3 | Lecture & Practices | Ch 4.2 |
| 11 | Files  Sets | 3 | Lecture & Practices | Ch 5.1, Ch 5.2 |
| 12 | Dictionaries | 3 | Lecture & Practices | Ch 5.3 |
| 13 | Object-oriented Programming | 3 | Lecture & Practices | Ch 7.1, Ch 7.2 |
| 14 | Presentation of Team Projects | 3 | Presentation & Discussion | Team Projects |
| 15 | Final Exam | 3 | Written Exam | Ch 3.4 ~ Ch 7.2 |

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| **References** |
| Please describe the daily course contents, teaching methods, assignments, and student evaluation methods. |