**Module Syllabus**

Module Syllabus 16 Programming Fundamentals

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| **Module Title** | Programming Fundamentals | |
| **Module Code** | ITP3915 | |
| **QF Credits** | 10 | |
| **QF Level** | 3 | |
| **Notional Learning**  **Hours** | 100 hours | Contact Hours: 39 (for full-time pre-employment)  (Lecture: 13; Lab/Workshop: 26) |
| Self-study Hours: 61 (for full-time pre-employment) |
| Assessment Hours: 0  *(Outside Contact/Self-study Hours)* |

**Module Intended Learning Outcomes:**

On completion of the module, learners are expected to be able to:

1. develop programs to solve simple problems using appropriate program structures;
2. develop technical documentation for simple application programs; and
3. apply testing and debugging techniques to identify and fix program bugs in simple application programs.

**Learning Contents and Indicative Contact Hours:**

|  |  |
| --- | --- |
| **Learning Contents** | **Indicative Contact Hours** |
| 1. Basic Programming Concepts  * Program development environment and tools * Skeleton of a simple program * Steps in program development * Algorithm development * Characteristics of good programs, programming style and documentation | 3 hours |
| 1. Concepts of Literals and Operations  * Basic Literals * Operators and Variables * Expressions and Statements | 9 hours |
| 1. Basic Program Structures  * Making decision and loops * Functions, parameter passing and returning value * List, tuple and dictionary * Simple I/O * Using Modules and Packages * Basic Object Oriented Programming * Basic Regular Expressions | 24 hours |
| 1. Testing and Debugging  * Programming errors * Debugging techniques * Testing strategies | 3 hours |

**Mapping of Learning Contents with Module Intended Learning Outcomes:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Learning Contents** | **Module Intended Learning Outcomes** | | |
| **1** | **2** | **3** |
| 1 | Basic Programming Concepts | ✓ | ✓ |  |
| 2 | Concepts of Literals and Operations | ✓ |  |  |
| 3 | Basic Program Structures | ✓ |  |  |
| 4 | Testing and Debugging |  |  | ✓ |

**Learning and Teaching Strategies:**

* In this module, emphasis should be stressed on how to develop good habits and the right practices in programming and techniques in debugging programs. The module is very practice based. It depends very much on laboratories classes for students to clear up any doubts relating to the concepts illustrated during the lecture and for them to have hands-on practice on writing and debugging programs.
* Lecture classes are used to deliver formal material with a focus on the development of a conceptual understanding of programming.
* Work sheets will be given to students in tutorials to reinforce the knowledge they gain in lectures. In laboratories, students are provided with problems and they have to provide computer-based solutions. Staff may distribute templates for students to use or may give them partial programs to complete.

**Assessment Scheme:**

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| --- | --- |
| **Continuous Assessment (CA)**  *Test*  *Lab/Workshop* | **20%**  **30%** |
| **End-of-Module Assessment (EA)**  *Assignment*  *EA Test* | **20%**  **30%** |
| **Total** | **100%** |

**Textbooks:**

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| --- | --- |
| 1. | Cisco Networking Academy in collaboration with OpenEDG Python Institute. (n.d.). *PCAP: Programming Essentials in Python*. Retrieved from https://netacad.com |

**References:**

|  |  |
| --- | --- |
| 1. | Parker, J. R. (2016). *Python: An Introduction to Programming*. Mercury Learning & Information. |
| 2. | Rother, K. (2017). *Pro Python Best Practices: Debugging, Testing and Maintenance*. Apress. |
| 3. | López, F. & Romero, V. (2014). *Mastering Python Regular Expressions: leverage regular expressions in python even for the most complex features*. Packt Publishing. |

**Creation/Revision Record:**

|  |  |  |
| --- | --- | --- |
| **Version** | **Date** | **Created/Revised by** |
| 1 | 1 November 2018 | Mr Yip Shui Wah, Kelvin |

**Module Assessment Scheme**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **Module Details** |  | | | | | |
| a | Module Code/Title | ITP3915/ Programming Fundamentals | | | | | |
| b | Programme Code/Title | IT114122/HD in Cybersecurity  IT114124/HD in AI and Smart Technology | | | | | |
| c | QF Level | 3 | | | | | |
| d | Notional Learning Hours (total) | 100 | | | | | |
| e | Notional Learning Hours, comprising of | Contact Hours | | Self-study Hours | | Assessment Hours | |
| 39 hrs | | 61 hrs | | 0 hrs | |
| **2** | **Module Intended Learning Outcome (MILO)** | Module Assessment in alignment with MILO  (\*Please indicate the assessment mode for each MILO by ticking (✓) the appropriate box(es)) | | | | | |
| CA | | | EA | | |
| Tests | Workshop | | Assignment | | Test |
| a | Develop programs to solve simple problems using appropriate program structures | ✓ | ✓ | | ✓ | | ✓ |
| b | Develop technical documentation for simple application programs; and |  | ✓ | | ✓ | |  |
| c | Apply testing and debugging techniques to identify and fix program bugs in simple application programs | ✓ | ✓ | | ✓ | | ✓ |
| **3** | **Assessment** | Total CA marks contributing to 50% of module mark  Total EA marks contributing to 50% of module mark | | | | | |
| a | Component | CA | | | EA | | |
| Tests | Lab/  Workshop | | Assignment | | Test |
| b | No. of assessment (s) | 1 | 5 | | 1 | | 1 |
| c | CA component as a % of module mark | 20% | 30% | | 20% | | 30% |
| **4** | **End-of-Module Assessment (EA) in the form of examination** | | | | | | |
| a | Duration of examination | Nil | | | | | |
| b | Approximate distribution of marks | Nil | | | | | |
| c | Choice of questions | Nil | | | | | |
| **5** | **Any Special Assessment Requirement** | EA Test is a time constraint test which is conducted in a laboratory. | | | | | |

**Note:**

1. The Module Assessment Scheme (MAS) is compiled at the beginning of each academic term or year and is subject to annual review by respective Programme Team, following the prevailing Procedure for Programme Development, Revision and Review.
2. Details of Module Intended Learning Outcomes (MILOs) may be specified in separate page as reference.