

Programming in Python VPPP Computer Programming and Web Development

**MODULE GUIDE (VENDOR)
2025
Semester 2**

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2 Module information

Module name as on EMC	Programming in Python	
Module code as on EMC	VPPP	
Semester	2	
Lectures	Total: 96hrs	Per week: 16hrs
Prescribed reading	OpenEDG Python Essentials Part 1: Edube Interactive :: About PE1 OpenEDG Python Essentials Part 2: Edube Interactive :: About PE2	
Recommended Reading	Python Essentials 1 and 2, by The OpenEDG Python Institute (MyNGI)	

3 How much time should I be spending on my studies

You should invest time and effort into thoroughly understanding the content and developing practical skills. During teaching weeks, there are approximately 16 hours of dedicated teaching, and we encourage you to spend additional hours on independent study. This includes practicing skills, reviewing content, reading, preparing for tests, and ultimately getting ready for your summative examination. Success in your external examination is something employers will value, and you are more likely to be successful in these examinations if you have invested the time and energy to be sure you are competent in the content and skills. Practice is the only way to do this.

Some students may need a little more and others a little less but if you are not spending at least 25 hours per week working independently you are placing your success at risk.

To complete a full year load, you should be studying as if you are in full-time employment – between 40 and 45 hours a week during the semesters.

4 Module Purpose and Outcomes

PURPOSE:

The purpose of this module is to guide you from a state of complete programming illiteracy to a level of programming knowledge which allows you to design, write, debug, and run programs encoded in the Python language, and to understand the basic concepts of software development technology.

Part 2 picks up where Python Essentials 1 leaves off. Its main goal is to teach you the skills related to the more advanced aspects of Python programming, including modules, packages, exceptions, file processing, as well as with general coding techniques and object-oriented programming (OOP).

On completion students who achieve well in this module will be prepared to write the following international certifications: PCEP-30-02 (Certified Entry-Level Python Programmer) and PCAP-31-03 (Certified Associate in Python Programming) exams from Open EDG Python Institute.

OUTCOMES

- Master Python syntax and structure – Learn variables, loops, conditionals, and basic code formatting.
- Understand programming fundamentals – Grasp logic, flow control, and algorithm basics across problems.
- Write and use functions – Create reusable code with parameters, returns, and scope awareness.
- Work with data structures – Use lists, tuples, dictionaries, and strings to manage information.
- Prepare for PCEP and PCAP exams – Build skills aligned with international Python certification standards.
- Practice debugging and error handling – Identify bugs and handle errors using try-except blocks.
- Build confidence for real projects – Apply knowledge in small apps, automation, or simple tools.

5 Planning and pacing

	DATES	TOPICS/ UNITS AND CONTENT	MATERIAL
1	18/08 – 22/08	<p>Essentials 1</p> <p>Module 1</p> <ul style="list-style-type: none"> • Introduction to Python and Computer Programming • Downloading and Installing Python • Quiz + Informal Test on Edube <p>Module 2</p> <ul style="list-style-type: none"> • Hello, World! • Python Literals • Arithmetic Operators and the Hierarchy of Priorities • Variables • Comments • The Input () Function and String Operators • Quiz + Informal Test on Edube 	<p><i>*Hold “ctrl” on your keyboard AND left click on your mouse to access the links below*</i></p> <p>Python Essentials 1: Module 1</p> <p>Python Essentials 1: Module 2</p>
	25/08	Test 1 – Based on Modules 1 and 2	My NGI

2	25/08 – 29/08	Module 3 <ul style="list-style-type: none"> • <i>Comparison Operators and Conditional Execution</i> • <i>Loops</i> • <i>Logic and Bit Operations in Python</i> • <i>Lists</i> • <i>Sorting Simple Lists</i> • <i>List Processing</i> • <i>Multidimensional Arrays</i> • <i>Quiz + Informal Test on Edube</i> 	Python Essentials 1: Module 3
3	01/09 – 05/09	Module 4 <ul style="list-style-type: none"> • <i>Functions</i> • <i>Function Parameters and Argument Passing</i> • <i>Returning Results from Functions</i> • <i>Functions and Scopes</i> • <i>Creating Simple Functions</i> • <i>Tuples and Dictionaries</i> • <i>Exceptions</i> • <i>Quiz + Informal Test on Edube</i> 	Python Essentials 1: Module 4
	08/09	Test 2 – Based on Module 3 and 4	My NGI

4	08/09 – 12/09	<p>Essentials 2</p> <p>Module 1 – Modules, Packages and PIP</p> <ul style="list-style-type: none"> • <i>Introduction to Modules in Python</i> • <i>Selected Python Modules (Math, Random, Platform)</i> • <i>Modules and Packages</i> • <i>Python Package Installer (PIP)</i> • <i>Quiz + Informal Test on Edube</i> <p>Module 2 – String, String and List Methods, and Exceptions</p> <ul style="list-style-type: none"> • <i>Characters, Strings, Computers</i> • <i>The Nature of Strings in Python</i> • <i>String Methods</i> • <i>Strings in Action and List Methods</i> • <i>Strings and the Four Simple Programs</i> • <i>Errors – the Programmer’s Daily Bread</i> • <i>The Hierarchy of Exceptions</i> • <i>Useful Exceptions</i> • <i>Quiz + Informal Test on Edube</i> 	<p><u>Python Essentials 2: Module 1</u></p> <p><u>Python Essentials 2: Module 2</u></p>
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5	15/09 – 19/09	<p>Module 3 – Object-Oriented Programming</p> <ul style="list-style-type: none"> • <i>The Foundations of OOP (Classes, Objects, Attributes)</i> • <i>Stack: The Procedural VS OOP Approach</i> • <i>Properties (Instance Variable, Class Variables, Attributes)</i> • <i>Methods (Class and Object Methods, Constructors, Parameters, Properties)</i> • <i>Inheritance (Functions, Methods, Class Hierarchies, Polymorphism, Composition, Single VS Multiple Inheritance)</i> • <i>The Objective Nature of Python Exceptions</i> • <i>Quiz + Informal Test – on Edube</i> <p>Module 4 – Miscellaneous</p> <ul style="list-style-type: none"> • <i>Generators, Iterators, and Closures</i> • <i>Files (File Streams, File Processing, Diagnosing Stream Problems)</i> • <i>Processing Text and Binary Files</i> • <i>The OS Module – Working with Date-Time and Time-Related Functions</i> • <i>The Calendar Module – Working with Calendar-Related Functions</i> • <i>Quiz + Informal Test – on Edube</i> 	<p>Python Essentials 2: Module 3</p> <p>Python Essentials 2: Module 4</p>
	22/09	Test 3 – Based on Essentials 2 (Modules 1, 2, 3 and 4)	My NGI
6	22/09 – 26/09	Revision and Study Break	
	26/09	Exam – Based on Essentials 1 and 2	My NGI

6 Assessment Structure

6.1 External certification

The purpose of this programme is to ensure you are sufficiently skilled to successfully write external certification exams. The NGI certificate of completion/ competence is a measure of the learning you do while you are with us, but the greatest value of this programme is you being ready to achieve external, international certification.

Some of these exam costs are built into your programme fee – please be sure to make use of the opportunity they provide. Other exams (or repeat attempts if you fail an exam) are available at a discounted price if you book them through us.

If you achieve 70% for your examination with us, you have a reasonably good chance of passing the external examination. Exams will be scheduled within specific date ranges, and NGI will ensure that vouchers are prepared and available for those dates. For optional exams, students can inform us when they are ready to write, and we will arrange to procure the voucher for them.

6.2 Important information related to internal assessment

The purpose of internal assessment is to enable you and NGI to monitor and support your progress towards the competency level required for the external examination and to give us the information required to provide you with an internal competency certificate to verify what you have learned. Full participation in the assessment is thus required.

You are always subject to the requirements of the Intellectual Integrity and Assessment Policies – please make sure that you are familiar with them. They are on myNGI.

You will be required to complete both formative (tests) and summative (exams) assessments. The dates for each are in the planner above – remember that tests and exams are written on the same date across all campuses.

6.3 Formative assessments: tests

For this module you will write 3 formative assessments in the format of 3 Tests. This will normally be ongoing assessments during the module's classes, in line with the instructions set out in the module guide.

Your final academic record from us will not give any weighting to these formative assessments and will only reflect the mark you get for your internal summative examination.

Please note that if you do not average at least 60% for the formative assessments, you are very unlikely to pass the internal examination and will almost certainly not pass the external examination.

6.4 Internal summative examination

To pass the module for the purposes of your internal certification, a mark of 70% on your summative assessment is required. An internal summative exam will take place at the end of the module. You have a maximum of three opportunities to achieve competence at this level.

A student who fails to achieve 70% and above after all 3 attempts, will have to re-do the module or will not receive an internal record of competence in the module. We will also not issue vouchers for students who do not have the 70% - see below.

6.5 International examination.

For International exam costs built into your programme fees, a student will only receive a voucher once the student has shown competence by achieving 70% and above in their internal summative assessment. This is as you are not likely to pass the international examination as the internal examination is at a similar level and is in a similar structure.

You may purchase a voucher through us at our preferential pricing for modules that you have not achieved the 70% or where the cost of the international examination is not included.

6.6 Mark and assessment structure

As per the pacing table at the start of the Module Guide you will do three tests (formative) and one examination for internal purposes. For your internal certification we will calculate your mark as follows.

Mark structure:	Units or topics covered	Marks	Period Weight
Test 1 25/08	1 - 2	60	
Test 2 08/09	3 - 4	60	
Test 3 22/09	Essentials 2 (1 – 4)	60	
Final Examination 26/09	Essentials 1 & 2	120	100%

Remember that you need all the practise you can get if you are to succeed in the external examination.

6.7 Assessment disputes and appeals

The turnaround times for marking, the method by which you will receive your results and the ways in which you can appeal are all part of the Assessment Policy. It is up to you to know how this works. Ignorance is not a reason for not complying.

7 Where to get help

Your first part of call is this guide and myNGI.

You should also feel free to reach out to your lecturer and your peers.

You are also entitled to engage with the Programme Coordinator on your campus or the Programme Manager nationally.

Reach out to Student Support by emailing the team to assist you with the following:

For general inquiries on academic processes, campus activities, your academic progress, or your well-being email studentsupport@ngi.ac.za.

MS Office and NGI student email address email ithelp@ngi.ac.za.

For myNGI inquiries email myngi@ngi.ac.za.

For inquiries related to your results email emc@ngi.ac.za.

For disputes, complaints, or appeals email appeals@ngi.ac.za.

Get assistance from an Information Specialist by emailing thebridge@ngi.ac.za.

Your success is ours – don't struggle alone.