



Intensive Foundations of Computer Science and Programming II Course Descriptor

Course Title	Intensive Foundations of Computer Science and Programming II	Faculty	EDGE Innovation Unit (London)
Course code	NCHNAP448	Course Leader	Professor Scott Wildman (interim)
Credit points	15	Teaching Period	This course will typically be delivered over a 6-week period.
FHEQ level	4	Date approved	June 2020
Compulsory/Optional	Compulsory		
Prerequisites	None		

COURSE SUMMARY

This course covers more advanced topics in computing and programming principles. Learners will explore advanced Python programming and design principles. Learners will engage in an extensive programming task which will result in the creation of a test suite. Learners will explore pair programming and public code review techniques, as found in industry today. Learners will have the opportunity to apply their knowledge of computer systems and programming using industry-standard cloud-based technology e.g. using ServiceNow training.

COURSE AIMS

- Train learners in more advanced computing and programming principles.
- Train learners to design a test plan when given a set of criteria, business standards, and expected outcomes.

- Allow learners to explore when a programmatic solution can be applied to a business need.

LEARNING OUTCOMES

On successful completion of the course, learners will be able to:

KNOWLEDGE AND UNDERSTANDING

- K1a Understand the advanced concepts and principles associated with programming languages and design.
- K2a Understand to use Python libraries to analyse data, perform mathematical transformations, effectively plot, visualise, import and export data.
- K3a Understand how to practically and conceptually develop industrial strength software using Python.

SUBJECT SPECIFIC SKILLS

- S1a Apply Python to a range of mathematical and data problems.
- S2a Develop tests to exercise implemented code and appreciate the importance of good testing in the software development process.
- S3a Document, test, evaluate and critique advanced code.

TRANSFERABLE AND PROFESSIONAL SKILLS

- T1ai Demonstrate the ability to critically investigate, make judgements and use self-initiative.
- T1aii Display a developing technical proficiency of written English skills that demonstrates an ability to communicate clearly and accurately when producing structured and coherent pieces of text.
- T2a Demonstrate the development of logical analysis and conceptual thinking.
- T3a Demonstrate the ability to manipulate, structure and transform data.

TEACHING AND LEARNING

This is an e-learning course, taught throughout the year.

This course can be offered as a standalone short course.

Teaching and learning strategies for this course will include:

- On-line learning
- On-line discussion groups

- On-line assessment

Course information and supplementary materials will be available on the College's Virtual Learning Environment (VLE).

Learners are required to attend and participate in all the formal and timetabled sessions for this course. Learners are also expected to manage their self-directed learning and independent study in support of the course.

The course learning and teaching hours will be structured as follows:

- Off-the-job learning and teaching (6 days x 7 hours) = 42 hours
- On-the-job learning (12 days x 7 hours) = 84 hours (e.g. 2 days per week for 6 weeks)
- Private study (4 hours per week) = 24 hours

Total = 150 hours

Workplace assignments (see below) will be completed as part of on-the-job learning.

ASSESSMENT

FORMATIVE

Learners will be formatively assessed during the course by means of set assignments. These will not count towards the final degree but will provide learners with developmental feedback.

SUMMATIVE

Assessment will be in two forms:

AE	Assessment Type	Weighting	Online submission	Duration	Length
1	Set programming exercises	50%	Yes	Requiring 15-25 hours to complete	N/A
2	Report following workplace practical exercise	50%	Yes	Requiring 15-25 hours to complete	2,000 words +/- 10%, excluding data tables

FEEDBACK

Learners will receive formal feedback in a variety of ways: written (via email or VLE correspondence) and indirectly through online discussion groups. Learners will also attend a formal meeting with their Academic Mentor (and for apprentices, including their Line Manager). These bi- or tri-partite reviews will monitor and evaluate the learner's progress.

Feedback is provided on all summatively assessed assignments and through generic internal examiners' reports, both of which are posted on the VLE.

INDICATIVE READING

Note: Comprehensive and current reading lists for courses are produced annually in the Course Syllabus or other documentation provided to learners; the indicative reading list provided below is used as part of the approval/modification process only.

BOOKS

- Summerfield, M. (2009), *Programming in Python 3: A Complete Introduction to the Python Language*, Upper Saddle River, NJ: Addison-Wesley
- Lutz, M. (2011), *Programming Python*, Beijing; Farnham : O'Reilly
- Allen, B. (2015), *Think Python: How to Think Like a Computer Scientist*. Farnham: O'Reilly

JOURNALS

Learners are encouraged to read material from relevant journals on Computer Systems and Programming as directed by their course trainer.

ELECTRONIC RESOURCES

Learners are encouraged to consult relevant websites on Computer Systems and Programming.

INDICATIVE TOPICS

- Variables and primitive data types
 - Sequential and binary search algorithms
 - Stacks and Queues
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Title: NCHNAP448 Intensive Foundations of Computer Science and Programming II Approved by: Academic Board Location: Academic Handbook/Programme specifications and Handbooks/ Undergraduate Apprenticeship Programmes/BSc (Hons) Digital & Technology Solutions Programme Specification/Course Descriptors					
Version number	Date approved	Date published	Owner	Proposed next review date	Modification (As per AQF4) & category number
2.1	May 2022	May 2022	Scott Wildman	June 2025	Category 1: Corrections/clarifications to documents which do not change approved content.
2.0	January 2022	April 2022	Scott Wildman	June 2025	Category 3: Changes to Learning Outcomes
1.0	June 2020	June 2020	Scott Wildman	June 2025	