Object-Oriented Design and Development Course Descriptor

Course Title	Object-Oriented Design and Development	Faculty	EDGE Innovation Unit (London)
Course code	NCHNAP6140	Course Leader	Dr Yu-Chun Pan
Credit points	15	Teaching Period	This course will typically be delivered over a 6-week period.
FHEQ level	6	Date approved	September 2022
Core/Optional	Core for Software Engineer Specialism	Date modified	
Prerequisites			

Course Summary

The course introduces and explores the concepts that underpin object-oriented (OO) design and development. It considers the ways in which OO principles bring functional and systematic approaches to computational thinking. This course explores the concepts that inform the use of classes, objects and methods in software design and development. It also explores the use of the core OO principles for system design and testing, such as encapsulation, inheritance, abstraction, coupling, cohesion, polymorphism, unit testing, and Unified Modeling Language (UML).

Course Aims

- To introduce the principles and conceptual frameworks that underpin object-oriented design and development.
- To enable learners to structure data according to object-oriented design principles.
- To train learners to practically implement object-oriented design for real life applications using Python.

Learning Outcomes

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

Knowledge and Understanding

K1c Demonstrate knowledge and critical understanding of the principles and concepts that underpin object-oriented design.

K2c Demonstrate knowledge and critical understanding of key features of object-oriented design.

K3c Demonstrate knowledge and critical understanding of the implementation of object-oriented design.

Subject Specific Skills

S1c Apply the principles of object-oriented design to structure data.

S2c Use object-oriented design principles and techniques to solve practical real life programming problems.

S3c Apply appropriate tools to test object-oriented design programming solutions.

Transferable and Professional Skills

T1ci Systematically analyse and structure data.

T1cii Utilise an advanced level of technical proficiency of written English, while effectively applying scholarly terminology, to critically evaluate, analyse and make judgements and apply these appropriately to a range of diverse contexts.

T2c Apply logical thought and a systematic approach to problem solving.

T3c Use professional terminology and industry standard methodologies.

Teaching And Learning

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

Teaching and learning strategies for this course will include:

- Online learning
- Online discussion groups
- Online 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 students with developmental feedback.

Summative

Assessment will be in two forms:

AE	Assessment Type	Weighting	Online submission	Duration	Length
1	Set Exercises	60%	Yes	Requiring on average 20 – 30 hours to complete	-
2	Written Assignment (workplace case study)	40%	Yes		1500 words

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 summative 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 Guide or other documentation provided to learners; the indicative reading list provided below is used as part of the approval/modification process only.

Books

- Booch, G., Maksimchuk, R.A., Engle, M.W., Young, B.J., Conallen, J., Houston, K.A. (2007), *Object-Oriented Analysis and Design With Applications, Third Edition*: Addison Wesley Professional.
- Weisfeld, M. (2019), *Object-Oriented Thought Process, 5th Edition*: Addison Wesley Professional.

Journals

Learners are encouraged to read material from relevant journals on Object- Oriented Design and Development as directed by their course leader.

Electronic Resources

Learners are encouraged to consult relevant websites on Object-Oriented Design and Development.

Indicative Topics

Learners will study the following topics:

- Object-Oriented Design Principles and Methodologies
- Object-Oriented Development
- Classes, Objects and Methods

Title: NCHNAP6140 Object-Oriented Design and Development **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**
1.0	September 2022	September 2022	Dr Yu-Chun Pan	September 2027	