



Predictive Analytics Using Python Course Descriptor

Course Title	Predictive Analytics Using Python	Faculty	EDGE Innovation Unit (London)
Course code	NCHNAP689	Course Leader	Professor Scott Wildman (interim)
Credit points	15	Teaching Period	This course will typically be delivered over a 6-week period.
FHEQ level	6	Date approved	June 2020
Compulsory/Optional	Compulsory for Business Analyst Specialism, or, Data Analyst Specialism		
Pre-requisites	None		
Co-requisites	None		

COURSE SUMMARY

This course introduces the end-to-end data-driven statistical modelling and predictive modelling approach in Python with applications and case studies. Includes all the data and modelling steps in a full modelling cycle; exploratory data analysis and data cleansing for outlier imputation and data normalization; commonly applied modelling techniques such as classification, linear regression, and logistic regression; and modelling steps such as model training, validation, and testing.

COURSE AIMS

- Trains learners in the fundamentals of machine learning and data mining.
- Trains learners in the practical application of machine learning and data mining using Python.
- Allows learners to explore the full data analytic workflow.

LEARNING OUTCOMES

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

KNOWLEDGE AND UNDERSTANDING

- K1c Have in-depth knowledge and understanding of the underlying mathematical principles and concepts of machine learning and data mining.
- K2c Have extensive knowledge of the data science workflow and the importance of data cleansing in professional data science.
- K3c Have in-depth knowledge of dimension reduction strategies and their use for visualisation.

SUBJECT SPECIFIC SKILLS

- S1c Develop and apply computer programmes to perform machine learning and data mining tasks.
- S2c Use programming to manipulate, cleanse and interrogate data.
- S3c Use programming to visualise the results of data analysis.

TRANSFERABLE AND PROFESSIONAL SKILLS

- T1ci Demonstrate advanced critical thinking and problem-solving skills.
- 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 Approach problems in a professional, structured manner.
- T3c Effectively communicate to a range of stakeholders.

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	Written Assignment (workplace case study)	60%	Yes	-	2,000 words +/- 10%, excluding data tables
2	Set exercise (workplace dataset)	40%	Yes	Requiring on average 10-20 hours to complete	-

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 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

- Said, A., and Torra, V., (2019), *Data Science in Practice*, Cham: Springer International Publishing : Imprint: Springer
- 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 consult relevant journals on predictive analytics.

ELECTRONIC RESOURCES

Learners are encouraged to consult relevant electronic resources on predictive analytics.

INDICATIVE TOPICS

- Machine Learning
- Data Mining
- Data Cleansing

Title: NCHNAP689 Predictive Analytics Using Python					
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
2.0	January 2022	April 2022	Scott Wildman	June 2025	Category 3: Changes to Learning Outcomes
1.0	June 2020	June 2020	Scott Wildman	June 2025	