New College of the Humanities

Advances in Data Science Course Descriptor

Course Title	Advances in Data Science	Faculty	EDGE Innovation Unit (London)
Course code	NCHNAP693	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		
Pre-requisites	None		
Co-requisites	None		

COURSE SUMMARY

This course will explore cutting-edge advances in data science, such as artificial intelligence, deep learning, advanced computer vision and natural language processing and meta analysis. Learners will explore the topics through real-world case studies.

COURSE AIMS

- To expose learners to the latest techniques and the thinking in data science.
- Train learners in advanced techniques, such as artificial intelligence, meta analysis, advanced Computer Vision and NLP.
- To equip learners with the knowledge and tools to work effectively in cutting-edge organisations.

LEARNING OUTCOMES

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

KNOWLEDGE AND UNDERSTANDING

K1c	Critically understand the detailed principles and concepts of advanced data science techniques, such as artificial intelligence, deep learning and meta analysis.
K2c	Evaluate the limits, uncertainty and ambiguity of each topic and recommend the appropriate use of a range of advanced data analytical techniques for real-world scenarios.

SUBJECT SPECIFIC SKILLS

S1c	Consolidate learning by applying a range of advanced data analytical techniques to identify patterns, predict trends and visualise conclusions for complex data.
S2c	Interrogate and manipulate a range of complex data sets with different structures and formats, acquired or synthetically generated.
S3c	Independently provide solutions to real-world data science problems using advanced data retrieval and modelling techniques.

TRANSFERABLE AND PROFESSIONAL SKILLS

T1c	Engage in a thorough methodological approach to problem solving .
T2c	Evaluate and interrogate data at a high level.
T3ci	Demonstrate advanced conceptual thinking and analytical skills.
T3cii	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.

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	50%	Yes	-	2,000 words +/- 10%, excluding data tables
2	Report based on workplace practical	50%	Yes	Requiring on average 15-25 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

- Callan, R., (2003), *Artificial Intelligence*, Basingstoke : Palgrave Macmillan
- Forsyth, D., (2012), *Computer Vision: A Modern Approach*, Boston, Mass. ; London : Pearson ; Harlow : Pearson Education

- Eisenstein, J., (2019), *Introduction to Natural Language Processing*, Cambridge, Massachusetts : The MIT Press
- Borenstein, M., (2009), *Introduction to meta-analysis*, Wiley

JOURNALS

Learners are encouraged to consult relevant journals on artificial intelligence, computer vision, NLP, deep learning and meta analysis.

ELECTRONIC RESOURCES

Learners are encouraged to consult relevant electronic resources on artificial intelligence, computer vision, NLP, deep learning and meta analysis.

INDICATIVE TOPICS

- Artificial Intelligence and deep learning
- Computer Vision and NLP
- Meta Analysis

Title: NCHNAP693 Advances in Data Science

Approved by: Academic Board

Location: Academic Handbook/Programme specifications and Handbooks/ Undergraduate Apprenticeship Programmes/BSc (Hons) Data Science 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	September 2026	Category 1: Corrections/clarifications to documents which do not change approved content.
2.0	January 2022	April 2022	Scott Wildman	September 2026	Category 3: Changes to Learning Outcomes
1.0	June 2020	June 2020	Scott Wildman	June 2025	