



Applied Machine Learning Course Descriptor

Course Title	Applied Machine Learning	Faculty	EDGE Innovation Unit (London)
Course Code	NCHMV6107	Course Leader	Marta Rodriguez-Martinez
Credit points	30	Teaching Period	12 weeks
FHEQ level	6	Date approved	March 2021
Compulsory/ Optional	Compulsory		
Prerequisites	None		
Co-requisites	None		

COURSE SUMMARY

This course will build on foundational data science content (from Data Science Fundamentals) to gain a deeper understanding of how to develop machine learning models. The course will provide an in-depth focus on the tools and techniques in supervised and unsupervised machine learning, and associated linear algebra. Principles of data science will be expanded upon, including training and testing methodologies, bias-variance trade-off, feature engineering, and assessing model performance. Learners will be taught to train and optimise a range of predictive models.

COURSE AIMS

- Train learners to select a suitable model for a given problem that requires a machine learning solution.
- Train learners to train a machine learning model, optimise across a range of hyperparameters and evaluate model performance on unseen data.
- Train learners to document their model development and adhere to conventions in programming.

LEARNING OUTCOMES

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

KNOWLEDGE AND UNDERSTANDING

- K1c Critically appraise mathematical/conceptual principles behind a range of machine learning algorithms.
- K2c Critically evaluate machine learning testing methodologies.
- K3c Critically evaluate the use of machine learning algorithms in specific business contexts.

SUBJECT SPECIFIC SKILLS

- S2c Critically appraise appropriate project management methodologies for the implementation of a predictive model.
- S3c Critically evaluate the performance of predictive models and optimise by tuning hyperparameters.
- S3c Critically evaluate pre-processing, training and testing methodologies for predictive models.

TRANSFERABLE AND PROFESSIONAL SKILLS

- T1c Write technical documentation.
- T1c Communicate complex concepts and findings orally.
- T2c Communicate a complex solution including the research and rationale.

TEACHING AND LEARNING

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

- Seminar = 30 hours
- Applied Seminar = 15 hours
- Coaching session = 2 hours
- Academic Drop-ins = 8 hours
- Reading and Assessment Prep = 65 hours
- Application of learning = 180hours

Total = 300 hours

ASSESSMENT

FORMATIVE

Learners will be formatively assessed during the course through a range of techniques. During seminars, applied learning seminars and one to one coaching, questioning and quizzing are used as formative assessment. The purpose of the formative assessment is to provide learners with developmental feedback to support their learning.

SUMMATIVE

AE	Assessment Type	Weighting	Online submission	Duration	Length
1	Set exercises	60%	Yes	Requiring on average 30-40 hours to complete	4000 words +/-10%
2	Oral	10%	No	30 minutes +/-10%	-
2	Exam	30%	Yes	2 hours	-

The summative assessment will be assessed in accordance with the assessment aims set out in the Programme Specification.

FEEDBACK

Learners will receive formal feedback in a variety of ways. For summative assessments, feedback is written and provided within 20 days of submission, and for formative assessment it could include verbal or written feedback. Learners will also have a progress review each quarter, with their Multiverse Coach and their Line Manager. These reviews are an opportunity to discuss progress to date both in their role and on the degree programme.

For summative exams, feedback is provided through generic internal examiners' reports, which are posted on the Applied learning platform.

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

Nisbet, R., Elder, J. and Miner, G., 2017. Handbook of statistical analysis and data mining applications. Academic Press.

Simovici, D.A., 2012. Linear algebra tools for data mining. World Scientific.

Amr, T., 2020. *Hands-On Machine Learning with scikit-learn and Scientific Python Toolkits*. Packt Publishing.

INDICATIVE TOPICS

Learners will study the following topics:

- Supervised and unsupervised machine learning algorithms
- Model validation
- Feature engineering
- Assessing model performance

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Approved by: Academic Board					
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1.0	March 2021	March 2021	Marta Rodriguez-Martinez	Multiverse website	March 2026
Modifications (As per AQF4)					
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