# Machine Learning with Applications in Finance (COMP0050)

## Description

**Aims:**
This module aims at introducing students to basic ML tools, covering both supervised and unsupervised learning methods. We discuss some of the underlying principles and students will develop practical skills to use these methods in financial applications. In their coursework, students will perform their own data analyses in MATLAB.

**Learning outcomes:**
On successful completion of the module, a student will be able to:
1. understand the general background of ML methods and their differences to standard methods in Financial Econometrics and Statistics. Supervised learning methods and examples of their application in Finance;
2. understand unsupervised learning methods and examples of their application in Finance;

**Content:**
- General Introduction to Machine Learning: History and background; classification of ML approaches; overview of applications.
- Introduction and Applications of Supervised Learning: Linear regression; model selection and regularization; feature selection; logistic regression; regression trees and forests; support vector machines; neural networks.
- Introduction and Applications of Unsupervised Learning: Distance/similarity measures; clustering approaches; principal component analysis.

**Requisites:**
In order to be eligible to select this module, a student must be registered on a programme for which it is a formally-approved option or elective choice AND must (i) have an understanding of basic levels of probability theory, linear algebra, and multivariate calculus; (ii) be able to write a reasonably non-trivial computer program in

## Key information

<table>
<thead>
<tr>
<th><strong>Year</strong></th>
<th>2019/20</th>
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<tbody>
<tr>
<td><strong>Credit value</strong></td>
<td>15 (150 study hours)</td>
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<tr>
<td><strong>Delivery</strong></td>
<td>PGT L7, Campus-based</td>
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<td><strong>Reading List</strong></td>
<td>View on UCL website</td>
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<tr>
<td><strong>Tutor</strong></td>
<td>Dr Fabio Caccioli</td>
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<td><strong>Term</strong></td>
<td>Term 2</td>
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<tr>
<td><strong>Timetable</strong></td>
<td>View on UCL website</td>
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## Assessment

- Written examination (main exam period): 50%
- Report: 30%
- Report: 20%

## Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)
MATLAB.