## 國立東華大學

# 課　綱　Course Outline

### 經濟學系博士班國際組

| 中文課程名稱<br>Course Name in Chinese | 機器學習 | | | | |
|---|---|---|---|---|---|
| 英文課程名稱<br>Course Name in English | machine learning | | | | |
| 科目代碼<br>Course Code | EC__D0140 | 班　別<br>Degree | | 博士班<br>Ph.D. | |
| 修別<br>Type | 選修<br>Elective | 學分數<br>Credit(s) | 3.0 | 時　數<br>Hour(s) | 3.0 |
| 先修課程<br>Prerequisite | | | | | |

<table>
<tr><td colspan="2" align="center">課程目標<br>Course Objectives</td></tr>
<tr><td colspan="2">1、How to apply supervised learning methods to data analysis<br>2、How to apply unsupervised learning methods to data analysis<br>3、Use actual dataset to build up analytical capacity</td></tr>
<tr><td colspan="2" align="center">系教育目標<br>Dept.'s Education Objectives</td></tr>
<tr><td>1</td><td>培育具獨立學術研究與專業能力之優秀經濟人才。<br>Foster potential talents with professional knowledge and empirical skills in economics.</td></tr>
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| 系專業能力<br><br>Basic Learning Outcomes | | 課程目標與系專業能力相關性<br>Correlation between Course Objectives and Dept.'s Education Objectives |
|---|---|---|
| A | 數理分析能力：通曉經濟學的高階理論技巧，應用數學與賽局解決經濟議題的能力<br>Mathematical analysis skills: Mastering in advanced application of mathematical theories and game theory in analyzing economic issues | ● |
| B | 實證經濟分析能力：通曉經濟學的高階實證技巧，善用資訊科技進行資訊蒐集、資料統計與計量分析。<br>Empirical analysis skills: Mastering in advanced application of statistics and econometrics in data collection and examination | ● |
| C | 微觀經濟之闡釋能力：通曉高階個體經濟學相關的理論與應用<br>Microeconomic perspective: Thorough understanding of advanced microeconomic theories and relevant application | ○ |

| | | |
|---|---|---|
| D | 宏觀經濟之闡釋能力：通曉高階總體經濟學相關的理論與應用<br>Macroeconomic perspective: Thorough understanding of advanced macroeconomic theories and relevant application | |
| E | 樂活能力：具備適應現代社會的高階學養以及就業能力<br>Employment opportunities: Capabilities of advanced working on important policy and decision challenges in business and government | |
| F | 溝通表達能力：思路清晰，有能力與人溝通並撰寫高階專業研究報告<br>Communication skills: Having a clear mind and profound ability in presenting advanced professional academic research | ○ |

圖示說明Illustration：● 高度相關 Highly correlated ○中度相關 Moderately correlated

## 課程大綱
## Course Outline

1、Introduction
2、Linear algebra
3、Univariate regression analysis
4、Multivariate regression analysis
5、Classification
6、Resampling
7、Linear model and regularization
8、Non-linear model
9、Decision tree
10、Support vector machine
11、Unsupervised learning
12、Detecting abnormality
13、Neural network
14、Bayesian method

## 資源需求評估（師資專長之聘任、儀器設備的配合···等）
## Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

## 課程要求和教學方式之建議
## Course Requirements and Suggested Teaching Methods

## 其他
## Miscellaneous