**CUHK (SZ)**

**Course Outline**

1. **Course Identity**
2. **Course as listed in CUHK (SZ)**

The information in this block should be exactly as approved by CUHK Senate. In case there are any differences, please explain in the table below.

|  |  |
| --- | --- |
| Course code | ACT6211 |
| Course title (English) | Accounting Data-Driven Investment Analysis |
| Course title (Chinese) | 會計數據驅動投資分析 |
| Units | 3 |
| Description (English) | Modern investment analysis is increasingly quantitative in nature and investment strategies are more and more determined by accounting data-driven models. This course aims to provide student with the quantitative foundations involved in investment decisions backed with data analysis and statistical inferences. This course introduces quantitative methods involved in asset pricing and financial decision making. Student will learn how to build, test, and implement the types of models in use today that are essential for key investment decisions by quantitative asset managers. |
| Description (Chinese) |  |

1. **Corresponding course in CUHK**

Please give details of the *closest* corresponding course in CUHK (as approved by CUHK Senate and listed in course list). If the course in SZ maps to more than one course in CUHK, please make multiple copies of the block below.

|  |  |
| --- | --- |
| Course code | N/A |
| Course title (English) | N/A |
| Course title (Chinese) | N/A |
| Units | N/A |
| Description (English) | N/A |
| Description (Chinese) | N/A |

1. **Prerequisites / Co-requisites**

Please state prerequisites and co-requisites, in terms of courses in CUHK (SZ)\* or any other requirements (e.g., having taken certain subjects in high school).

(\* Because course codes may not yet be stable, please provide both course code and course tile.)

1. **Prerequisites**

ACT5006

1. **Co-requisites**
2. **Learning Outcomes**

Upon completion of this course, students should be able to:

* Understand financial data structure, such as data source representation, standard bars, and sampling features.
* Acquire scientific steps in building a trading strategy, and understand the pitfalls in a strategy research and backtesting.
* Apply machine learning algorithms / models in investment.

1. **Course syllabus**

|  |  |
| --- | --- |
|  | **Topics and order of presentation may be adjusted according to class progress** |
| **#** | Topics |
| **1** | Data Analysis |
| **2** | Modelling |
| **3** | Backtesting |
| **4** | Useful Financial Features |

1. **Assessment Scheme**

|  |  |
| --- | --- |
| **Component/ method** | **% weight** |
| Homework Assignments | 40% |
| Final Exam | 60% |
| Total | 100% |

1. **Grade descriptor**

|  |  |
| --- | --- |
|  | **Overall course** |
| A,  A- | Outstanding performance on all learning outcomes. Demonstrates thorough understanding of data-driven investment.  Understand techniques to do financial data analysis, backtesting and strategy evaluation. Apply common machine learning algorithms in investment. |
| B+, B, B- | Substantial performance on all learning outcomes. OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.  Understand techniques to do financial data analysis, backtesting and strategy evaluation. |
| C+, C, C- | Satisfactory performance on the learning outcomes in general.  Understand basics on steps and techniques to do financial data analysis and backtesting |
| D+, D | Barely satisfactory performance on a number of learning outcomes.  Demonstrates some understanding of data-driven investment |
| F | Unsatisfactory performance on a number of learning outcomes, or failure to meet specified assessment requirements |

1. **Feedback for evaluation**

CTE

1. **Reading**
2. **Required**

Advances in Financial Machine Learning, Marcos Lopez de Prado

1. **Recommended**
2. **Course components**

|  |  |
| --- | --- |
| **Activity** | **Frequency** |
| Lecture | 3 hours/week |

1. **Indicative teaching plan**

|  |  |  |
| --- | --- | --- |
| **Class** | **Content/ topic/ activity** | **Chapter** |
| 1 | Financial Data Structures | 1 |
| 2 | Labeling | 1 |
| 3 | Sample Weights | 1 |
| 4 | Fractional Differentiated Features | 1 |
| 5 | Ensemble Methods | 2 |
| 6 | Cross-Validation in Finance | 2 |
| 7 | Feature Importance | 2 |
| 8 | Bet Sizing | 3 |
| 9 | Backtesting through Cross-Validation | 3 |
| 10 | Backtest Statistics | 3 |
| 11 | Understand Strategy Risk | 3 |
| 12 | Machine Learning Asset Allocation | 3 |
| 13 | Structural Breaks | 4 |
| 14 | Microstructural Features | 4 |

1. **Implementation plan (2018–19)**

The implementation plan may vary from year to year. Please indicate expected enrolment, and number of sections.

60 students for lecture (x 1)

1. **Approval**

Has the course title been included in the programme submission approved by CUHK Senate? Are there any differences?

Yes.

Have the details (as in this document) been approved at School or other level in CUHK (SZ)?

Yes.

1. **Any other information**

|  |  |
| --- | --- |
| Instructor: | LI Xiaoxu |
| Office Location: |  |
| Telephone: | +85256004077 |
| Email: | [lixiaoxu06@gmail.com](mailto:lixiaoxu06@gmail.com) |
| Teaching Venue: | Futian Campus |

1. **Version date**

|  |  |
| --- | --- |
| Version number | V1 |
| As of (date) |  |

Please save file as XXXxxxx v-nnn yymmdd

XXXxxxx = course code, e.g., MAT1212

nn = version number, e.g., 001 for version 1

yymmdd = date of this version, e.g., 131210