

國立中山大學 108學年度第2學期 課程教學大綱

National Sun Yat-sen University 108Academic year Course syllabus

|                              |                    |                          |         |
|------------------------------|--------------------|--------------------------|---------|
| 中文名稱<br>Course name(Chinese) | 個體經濟學（二）           | 課號<br>Course Code        | ECON512 |
| 英文名稱<br>Course name(English) | MICROECONOMICS(II) |                          |         |
| 課程類別<br>Type of the course   | 講授類                | 必選修<br>Required/Selected | 必修      |
| 授課教師<br>Instructor           | 童永年                | 學分<br>Credit             | 3       |

因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，授課方式調整如下：

- ☐ 同步遠距【透過網路直播技術，同時進行線上教學，得採Microsoft Teams、Adobe connect等軟體進行】
- ☒ 同步遠距含錄影【透過網路直播技術，同時進行線上教學並同時錄影，課程內容可擇日再重播，得採Microsoft Teams、Adobe connect等軟體進行】
- ☐ 非同步遠距【課堂錄影或錄製數位教材放置網路供學生可非同時進行線上學習，得採EverCam、PPT簡報錄影、錄音方式進行】
- ☐ 實作類課程，經評估無法採遠距課程教學，後續復課後密集補課

★遠距教學軟體操作說明連結

因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，評分方式調整如下：

1. Midterm exam (take home) : 40%
2. Final exam (take home) : 40%
3. Class participation : 20%

課程大綱 Course syllabus

1. Introduction to the Game theory
2. Social Choice
3. Public goods

課程目標 Objectives

The purpose of this course is to develop students' research skills for economic analysis through reviewing the basic axioms and theorems of microeconomics. First, we will deal with the world of uncertainty by introducing Von Neumann and Morgenstern's expected utility theory. Second, we analyze how people's degree of risk aversion changes their behavior. Third, some basic ideas of game theory are introduced. And finally, we will step into the world of collective decision making. This thorough training will not only provide the students much needed skills of economic analysis as aforementioned, it but also gives them the ability to solve the problems during their future career.

授課方式 Teaching methods

講授

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
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| 評分方式〔 評分標準及比例 〕 Evaluation (Criteria and ratio)等第制單科成績對照表 letter grading reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 1.Midterm exam：40%<br>2.Final exam：40%<br>3.Class participation：20%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 參考書/教科書/閱讀文獻 Reference book/ textbook/ documents<br>〔 請遵守智慧財產權觀念，不可非法影印。教師所提供之教材供學生本人自修學習使用,不得散播及做為商業用途 〕<br>No copies for intellectual property rights. Textbooks provided by the instructor used only for self-study, can not broadcast or commercial use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 1. Mas-Colell, A., Whinston, M. and Green, F.(1995) Microeconomic Theory, Oxford University Press. NY, USA<br>2. Osborne, M. and Rubinstein, A. (1994) A Course in Game Theory, The MIT Press, Cambridge, MA, USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 每週課程內容及預計進度 Weekly scheduled progress                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| <table><tr><td>週次</td><td>日期</td><td>授課內容及主題</td></tr><tr><td>Week</td><td>Date</td><td>Content and topic</td></tr><tr><td>1</td><td>2020/02/27~2020/02/29</td><td>Introduction of the strategic form; mixed strategies; Nash equilibrium</td></tr><tr><td>2</td><td>2020/03/01~2020/03/07</td><td>Dominated strategies; Correlated equilibrium; Evolutionarily stable strategies</td></tr><tr><td>3</td><td>2020/03/08~2020/03/14</td><td>Games in extensive forms; Subgame perfect equilibrium</td></tr><tr><td>4</td><td>2020/03/15~2020/03/21</td><td>School-wide sport activity (Class cancelled)</td></tr><tr><td>5</td><td>2020/03/22~2020/03/28</td><td>Kuhn's theorem; Bargaining game</td></tr><tr><td>6</td><td>2020/03/29~2020/04/04</td><td>Bayesian games; Bayesian Nash equilibrium</td></tr><tr><td>7</td><td>2020/04/05~2020/04/11</td><td>Auction games</td></tr><tr><td>8</td><td>2020/04/12~2020/04/18</td><td>Repeated games; Folk theorem</td></tr><tr><td>9</td><td>2020/04/19~2020/04/25</td><td>Midterm exam</td></tr><tr><td>10</td><td>2020/04/26~2020/05/02</td><td>Extensive games with imperfect information</td></tr><tr><td>11</td><td>2020/05/03~2020/05/09</td><td>Sequential Equilibrium</td></tr><tr><td>12</td><td>2020/05/10~2020/05/16</td><td>Games of observable actions; Perfect Bayesian Nash equilibrium</td></tr><tr><td>13</td><td>2020/05/17~2020/05/23</td><td>Spence's education model; Signaling games</td></tr><tr><td>14</td><td>2020/05/24~2020/05/30</td><td>Arrow's impossibility theorem</td></tr><tr><td>15</td><td>2020/05/31~2020/06/06</td><td>Lobby</td></tr><tr><td>16</td><td>2020/06/07~2020/06/13</td><td>Externality and public goods I</td></tr><tr><td>17</td><td>2020/06/14~2020/06/20</td><td>Externality and public goods II</td></tr><tr><td>18</td><td>2020/06/21~2020/06/24</td><td>Final exam</td></tr></table> |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          | 週次 | 日期 | 授課內容及主題 | Week | Date | Content and topic | 1 | 2020/02/27~2020/02/29 | Introduction of the strategic form; mixed strategies; Nash equilibrium | 2 | 2020/03/01~2020/03/07 | Dominated strategies; Correlated equilibrium; Evolutionarily stable strategies | 3 | 2020/03/08~2020/03/14 | Games in extensive forms; Subgame perfect equilibrium | 4 | 2020/03/15~2020/03/21 | School-wide sport activity (Class cancelled) | 5 | 2020/03/22~2020/03/28 | Kuhn's theorem; Bargaining game | 6 | 2020/03/29~2020/04/04 | Bayesian games; Bayesian Nash equilibrium | 7 | 2020/04/05~2020/04/11 | Auction games | 8 | 2020/04/12~2020/04/18 | Repeated games; Folk theorem | 9 | 2020/04/19~2020/04/25 | Midterm exam | 10 | 2020/04/26~2020/05/02 | Extensive games with imperfect information | 11 | 2020/05/03~2020/05/09 | Sequential Equilibrium | 12 | 2020/05/10~2020/05/16 | Games of observable actions; Perfect Bayesian Nash equilibrium | 13 | 2020/05/17~2020/05/23 | Spence's education model; Signaling games | 14 | 2020/05/24~2020/05/30 | Arrow's impossibility theorem | 15 | 2020/05/31~2020/06/06 | Lobby | 16 | 2020/06/07~2020/06/13 | Externality and public goods I | 17 | 2020/06/14~2020/06/20 | Externality and public goods II | 18 | 2020/06/21~2020/06/24 | Final exam |
| 週次                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 日期                                           | 授課內容及主題                                                                        |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| Week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Date                                         | Content and topic                                                              |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/02/27~2020/02/29                        | Introduction of the strategic form; mixed strategies; Nash equilibrium         |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/03/01~2020/03/07                        | Dominated strategies; Correlated equilibrium; Evolutionarily stable strategies |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/03/08~2020/03/14                        | Games in extensive forms; Subgame perfect equilibrium                          |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/03/15~2020/03/21                        | School-wide sport activity (Class cancelled)                                   |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/03/22~2020/03/28                        | Kuhn's theorem; Bargaining game                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/03/29~2020/04/04                        | Bayesian games; Bayesian Nash equilibrium                                      |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/04/05~2020/04/11                        | Auction games                                                                  |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/04/12~2020/04/18                        | Repeated games; Folk theorem                                                   |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2020/04/19~2020/04/25                        | Midterm exam                                                                   |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/04/26~2020/05/02                        | Extensive games with imperfect information                                     |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/05/03~2020/05/09                        | Sequential Equilibrium                                                         |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/05/10~2020/05/16                        | Games of observable actions; Perfect Bayesian Nash equilibrium                 |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/05/17~2020/05/23                        | Spence's education model; Signaling games                                      |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/05/24~2020/05/30                        | Arrow's impossibility theorem                                                  |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/05/31~2020/06/06                        | Lobby                                                                          |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/06/07~2020/06/13                        | Externality and public goods I                                                 |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/06/14~2020/06/20                        | Externality and public goods II                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2020/06/21~2020/06/24                        | Final exam                                                                     |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 課業討論時間 Office hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 時段1 Time period 1:<br>時間 Time：星期二1400-1600<br>地點 Office/Laboratory：社4032<br>時段2 Time period 2：<br>時間 Time：星期三1000-1200<br>地點 Office/Laboratory：社4032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 系所學生專業能力/全校學生基本素養與核心能力 basic disciplines and core capabilities of the department and the university                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
| 系所學生專業能力/全校學生基本素養與核心能力<br>basic disciplines and core capabilities of the department                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 課堂活動與評量方式<br>Class activities and evaluation |                                                                                |                                 |                                             |                                        |                                         |                                 |                            |                   |                                                        |                          |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 本課程欲培養之能力與素養<br>This course enables          | 紙筆考試或測                                                                         | 課堂討論(含個案討論)<br>Group discussion | 個人書面報告、作業、作品、實驗<br>Indivisual paper report/ | 群組書面報告、作業、作品、實驗<br>Group paper report/ | 個人口頭報告<br>Individual oral presentation. | 群組口頭報告 Group oral presentation. | 課程規劃之校外參訪及實習<br>Off-campus | 證照/檢定<br>License. | 參與課程規劃之校內外活動及競賽<br>Participate in off-campus/on-campus | 課外閱讀<br>Outside reading. |    |    |         |      |      |                   |   |                       |                                                                        |   |                       |                                                                                |   |                       |                                                       |   |                       |                                              |   |                       |                                 |   |                       |                                           |   |                       |               |   |                       |                              |   |                       |              |    |                       |                                            |    |                       |                        |    |                       |                                                                |    |                       |                                           |    |                       |                               |    |                       |       |    |                       |                                |    |                       |                                 |    |                       |            |

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| 力。 3.<br>Lifelong<br>learning                                                  |  |  |  |  |  |  |  |  |  |  |  |
| 4.倫理與社會<br>責任。 4.<br>Ethnics and<br>social<br>responsibility                   |  |  |  |  |  |  |  |  |  |  |  |
| 5.美感品味。 5. Aesthetic<br>appreciation                                           |  |  |  |  |  |  |  |  |  |  |  |
| 6.創造力。 6.<br>Creativity                                                        |  |  |  |  |  |  |  |  |  |  |  |
| 7.全球視野。 7. Global<br>perspective                                               |  |  |  |  |  |  |  |  |  |  |  |
| 8.合作與領導<br>能力。 8.<br>Team work<br>and leadership                               |  |  |  |  |  |  |  |  |  |  |  |
| 9.山海胸襟與<br>自然情懷。 9.<br>Broad-<br>mindedness<br>and the<br>embrace of<br>nature |  |  |  |  |  |  |  |  |  |  |  |

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