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| 課程流水號<br>Serial Number                                      | 24002                                                                                                                                                                                                                                                                                                                                                                            |
| 課號<br>Course Number                                         | LS1004                                                                                                                                                                                                                                                                                                                                                                           |
| 班次<br>Class                                                 | *                                                                                                                                                                                                                                                                                                                                                                                |
| 科目名稱(中文)<br>Course Title(in Chinese)                        | 普通生物學實驗                                                                                                                                                                                                                                                                                                                                                                          |
| 科目名稱(外文)<br>Course Title(In English or other languages)     | General Biology Laboratory                                                                                                                                                                                                                                                                                                                                                       |
| 授課老師(中文)<br>Instructor(in Chinese)                          | 劉阜果,陳師慶,吳少傑,黃佳瑜,陳世勳,葉靖輝,陳盛良,王健家,吳沛翊,陳青諭,粘仲毅,高永旭,葉淑丹,陸重安,金秀蓮,羅月霞                                                                                                                                                                                                                                                                                                                  |
| 授課老師(外文)<br>Instructor(In English or other languages)       | Fu-Guo Robert Liu, Ssu-Ching Chen, Shaw-Jye Wu, Chia-Yu Huang, Ching-Hui Yeh, Shen-Liang Chen, Chien-Chia Wang, Chin-Yu Chen, Chung-Yi Nien, Yung-Hsi Kao, Shu-Dan Yeh, Chung-An Lu, Shioh-Lian Catherine Jin, Yueh-Hsia Luo                                                                                                                                                     |
| 辦公時間(中文)<br>Office Hour(in Chinese)                         | wed 10:00~12:00                                                                                                                                                                                                                                                                                                                                                                  |
| 辦公時間(外文)<br>Office Hour(In English or other languages)      | wed 10:00~12:00                                                                                                                                                                                                                                                                                                                                                                  |
| 課程目標(中文)<br>Course Objective(in Chinese)                    | 此實驗課配合普通生物學正課進度，讓學生在操作過程中更了解正課所教授之生物學基本知識，並學習基本儀器如顯微鏡、電泳槽的使用及基本技巧如生物繪圖、實驗報告的練習。使學生具備基礎研究的能力。                                                                                                                                                                                                                                                                                     |
| 課程目標(外文)<br>Course Objective(In English or other languages) | 此實驗課配合普通生物學正課進度，讓學生在操作過程中更了解正課所教授之生物學基本知識，並學習基本儀器如顯微鏡、電泳槽的使用及基本技巧如生物繪圖、實驗報告的練習。使學生具備基礎研究的能力。                                                                                                                                                                                                                                                                                     |
| 授課內容(中文)<br>Course Description(in Chinese)                  | <ol style="list-style-type: none"> <li>1 實驗室安全講習及分組</li> <li>2 孢子印的觀察</li> <li>3 觀察植物氣孔</li> <li>4 植物組織水勢測量</li> <li>5 校際活動週</li> <li>6 觀察植物構造</li> <li>7 觀察動物組織</li> <li>8 校園植物認識</li> <li>9 期中考週</li> <li>10 校外參訪</li> <li>11 細胞計數與存活測試</li> <li>12 植物表皮細胞的滲透變化</li> <li>13 酵素</li> <li>14 線蟲與果蠅的生殖系統</li> <li>15 果蠅胚胎與一齡幼蟲表皮製備與觀察</li> <li>16 人類細胞核與果蠅唾液腺染色體之製備與觀察</li> </ol> |

|                                                                   |                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   | 17 Check Out<br>18 期末考                                                                                                                                                                                                                                         |
| 授課內容(外文)<br>Course Description(In English or other languages)     | 1 實驗室安全講習及分組<br>2 孢子印的觀察<br>3 觀察植物氣孔<br>4 植物組織水勢測量<br>5 校際活動週<br>6 觀察植物構造<br>7 觀察動物組織<br>8 校園植物認識<br>9 期中考週<br>10 校外參訪<br>11 細胞計數與存活測試<br>12 植物表皮細胞的滲透變化<br>13 酵素<br>14 線蟲與果蠅的生殖系統<br>15 果蠅胚胎與一齡幼蟲表皮製備與觀察<br>16 人類細胞核與果蠅唾液腺染色體之製備與觀察<br>17 Check Out<br>18 期末考 |
| 教科書/參考書(中文)<br>Textbook/References(in Chinese)                    | 普通生物學實驗講義                                                                                                                                                                                                                                                      |
| 教科書/參考書(外文)<br>Textbook/References(In English or other languages) | 普通生物學實驗講義                                                                                                                                                                                                                                                      |
| 自編教材比例<br>Self-compiled<br>Textbook/References Proportion         | 100%                                                                                                                                                                                                                                                           |
| 授課方式<br>Requirements                                              | 講授Lecture 研討Seminar 實習/實驗<br>Internship/Experiment 個別指導Individual<br>Discussion                                                                                                                                                                                |
| 評量配分比重(中文)<br>Grading(in Chinese)                                 | 實驗報告佔50%，期末考佔30%，小考+平時成績佔20%                                                                                                                                                                                                                                   |
| 評量配分比重(外文)<br>Grading(In English or other languages)              | 實驗報告佔50%，期末考佔30%，小考+平時成績佔20%                                                                                                                                                                                                                                   |
| 課程所屬學制<br>Educational System                                      | 學士班(Undergraduate Programme)                                                                                                                                                                                                                                   |
| 課程領域<br>Course Domain                                             | 基礎學科<br>實驗操作                                                                                                                                                                                                                                                   |
| 跨系課程領域<br>Cross Department Course Domain                          |                                                                                                                                                                                                                                                                |

| 系所核心能力<br>Core Competencies<br>of Department              | 強度指數<br>Overall Rating |                          |               |                   |                |                           | 評量方式<br>Corresponding Assessments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------|------------------------|--------------------------|---------------|-------------------|----------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           | 0<br>不具<br>備<br>Zero   | 1<br>非常<br>低<br>Very Low | 2<br>低<br>Low | 3<br>普通<br>Medium | 4<br>高<br>High | 5<br>非常<br>高<br>Very High |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 基礎生物專業知識<br>Basic Biological Sciences                     | ●                      | ●                        | ●             | ●                 | ●              | ●                         | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input checked="" type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |
| 發掘問題及實驗能力<br>Question approaching and experimental skills | ●                      | ●                        | ●             | ●                 | ●              | ●                         | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input checked="" type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |

| 系所核心能力<br>Core Competencies<br>of Department | 強度指數<br>Overall Rating |                          |                       |                       |                       |                           | 評量方式<br>Corresponding Assessments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------|------------------------|--------------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | 0<br>不具<br>備<br>Zero   | 1<br>非常<br>低<br>Very Low | 2<br>低<br>Low         | 3<br>普通<br>Medium     | 4<br>高<br>High        | 5<br>非常<br>高<br>Very High |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 邏輯分析<br>Logical thinking and analysis        | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input checked="" type="checkbox"/> 無(No assessment)            |
| 電腦應用<br>Computer application                 | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |

| 系所核心能力<br>Core Competencies<br>of Department        | 強度指數<br>Overall Rating |                          |               |                   |                |                           | 評量方式<br>Corresponding Assessments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------|------------------------|--------------------------|---------------|-------------------|----------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     | 0<br>不具<br>備<br>Zero   | 1<br>非常<br>低<br>Very Low | 2<br>低<br>Low | 3<br>普通<br>Medium | 4<br>高<br>High | 5<br>非常<br>高<br>Very High |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 溝通技巧<br>Communication skills                        | ●                      | ●                        | ●             | ●                 | ●              | ●                         | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input checked="" type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |
| 獨立思考與自我學習<br>Independent thinking and self-learning | ●                      | ●                        | ●             | ●                 | ●              | ●                         | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input checked="" type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |

| 系所核心能力<br>Core Competencies<br>of Department | 強度指數<br>Overall Rating                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 評量方式<br>Corresponding Assessments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | 0<br>不具<br>備<br>Zero                                                                | 1<br>非常<br>低<br>Very Low                                                            | 2<br>低<br>Low                                                                       | 3<br>普通<br>Medium                                                                   | 4<br>高<br>High                                                                      | 5<br>非常<br>高<br>Very High                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 團隊合作<br>Team work                            |    |    |    |    |    |    | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input checked="" type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input checked="" type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input checked="" type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input type="checkbox"/> 無(No assessment) |
| 博雅通識<br>General knowledge                    |  |  |  |  |  |  | <input type="checkbox"/> 紙筆測驗/會考<br>(Test/Exam)<br><input type="checkbox"/> 作業練習(Assignments)<br><input type="checkbox"/> 口頭報告/口試<br>(Presentation/Oral Exam)<br><input type="checkbox"/> 專題研究報告(書面)<br>(Research Report(printed on paper))<br><input type="checkbox"/> 實作/實驗<br>(Practices/Experiments)<br><input type="checkbox"/> 出席/課堂表現<br>(Attendance/Performance)<br><input type="checkbox"/> 學習檔案評量(Portfolios Assessment)<br><input type="checkbox"/> 自我評量/同儕互評(Self Assessment/ Peer Assessment)<br><input type="checkbox"/> 作品/創作展演<br>(Products/Creative Performance)<br><input type="checkbox"/> 其他(Others)<br><input checked="" type="checkbox"/> 無(No assessment)                       |

