

課程流水號 Serial Number	24026
課號 Course Number	LS5082
班次 Class	*
科目名稱(中文) Course Title(in Chinese)	毒性檢測與替代方法
科目名稱(外文) Course Title(In English or other languages)	New approach methodologies(NAMs) in toxicity testing
授課老師(中文) Instructor(in Chinese)	鄭獻仁
授課老師(外文) Instructor(In English or other languages)	Hsien-Jen Cheng
辦公時間(中文) Office Hour(in Chinese)	五/56
辦公時間(外文) Office Hour(In English or other languages)	五/56
課程目標(中文) Course Objective(in Chinese)	<ol style="list-style-type: none"> <li>1. Understanding the 3R (Reduction, Refinement and Replacement) concept for more ethical use of animals in testing.</li> <li>2. Comprehensive studies on the regulations and development of alternative methods (or new approach methodologies).</li> <li>3. Learning routine testing methods (like OECD testing guidelines) for toxicological and ecotoxicological endpoints.</li> </ol>
課程目標(外文) Course Objective(In English or other languages)	<ol style="list-style-type: none"> <li>1. Understanding the 3R (Reduction, Refinement and Replacement) concept for more ethical use of animals in testing.</li> <li>2. Comprehensive studies on the regulations and development of alternative methods (or new approach methodologies).</li> <li>3. Learning routine testing methods (like OECD testing guidelines) for toxicological and ecotoxicological endpoints.</li> </ol>

授課內容(中文) Course Description(in Chinese)	<ol style="list-style-type: none"> <li>1. Course Introduction</li> <li>2. The 3R concept and alternative test methods</li> <li>3. Regulations and OECD testing guidelines</li> <li>4. Skin irritation and corrosion</li> <li>5. Eye irritation and serious damage</li> <li>6. Skin sensitisation</li> <li>7. Adverse Outcome Pathway (AOP)</li> <li>8. IATA and Defined Approaches (DA)</li> <li>9. Midterm Exam</li> <li>10. Genotoxicity</li> <li>11. Developmental and reproductive toxicity</li> <li>12. Ecotoxicology testing</li> <li>13. Other toxicological endpoints</li> <li>14. In silico analysis</li> <li>15. Other new developing alternative test methods</li> <li>16. Group Presentation I</li> <li>17. Group Presentation II</li> <li>18. Final Exam</li> </ol>
授課內容(外文) Course Description(In English or other languages)	<ol style="list-style-type: none"> <li>1. Course Introduction</li> <li>2. The 3R concept and alternative test methods</li> <li>3. Regulations and OECD testing guidelines</li> <li>4. Skin irritation and corrosion</li> <li>5. Eye irritation and serious damage</li> <li>6. Skin sensitisation</li> <li>7. Adverse Outcome Pathway (AOP)</li> <li>8. IATA and Defined Approaches (DA)</li> <li>9. Midterm Exam</li> <li>10. Genotoxicity</li> <li>11. Developmental and reproductive toxicity</li> <li>12. Ecotoxicology testing</li> <li>13. Other toxicological endpoints</li> <li>14. In silico analysis</li> <li>15. Other new developing alternative test methods</li> <li>16. Group Presentation I</li> <li>17. Group Presentation II</li> <li>18. Final Exam</li> </ol>
教科書/參考書(中文) Textbook/References(in Chinese)	OECD testing guidelines and related papers
教科書/參考書(外文) Textbook/References(In English or other languages)	OECD testing guidelines and related papers

自編教材比例 Self-compiled Textbook/References Proportion	
授課方式 Requirements	講授Lecture 研討Seminar
評量配分比重(中文) Grading(in Chinese)	期中考 (20%)+ 期末考 (20%) + 分組報告/書 面報告 (30%) + 出席/參與表現 (30%) =100%
評量配分比重(外文) Grading(In English or other languages)	Midterm exam (20%)+ Final exam (20%) +Presentation/Oral Exam (30%) +Attendance/participation (30%) =100%
課程所屬學制 Educational System	博士班(Doctoral Programme)
課程領域 Course Domain	進階學科 生理 生物科技 環境生物 生物資訊
跨系課程領域 Cross Department Course Domain	

系所核心能力 Core Competencies of Department	強度指數 Overall Rating	0	1	2	3	4	5	評量方式 Corresponding Assessments
		不 具 備 Zero	非 常 低 Very Low	低 Low	普通 Medium	高 High	非常 高 Very High	

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

強度指數 Overall Rating  系所核心能力 Core Competencies of Department	0 不 具 備  Zero	1 非 常 低  Very Low	2 低  Low	3 普通  Medium	4 高  High	5 非 常 高  Very High	評量方式 Corresponding Assessments
創新及整合研究 Innovative and integrative research	○	○	○	○	○	○	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 紙筆測驗/會考 (Test/Exam)</li> <li><input type="checkbox"/> 作業練習 (Assignments)</li> <li><input checked="" type="checkbox"/> 口頭報告/口試 (Presentation/Oral Exam)</li> <li><input type="checkbox"/> 專題研究報告(書面) (Research Report(printed on paper))</li> <li><input type="checkbox"/> 實作/實驗 (Practices/Experiments)</li> <li><input checked="" type="checkbox"/> 出席/課堂表現 (Attendance/Performance)</li> <li><input type="checkbox"/> 學習檔案評量 (Portfolios Assessment)</li> <li><input type="checkbox"/> 自我評量/同儕互評 (Self Assessment/ Peer Assessment)</li> <li><input type="checkbox"/> 作品/創作展演 (Products/Creative Performance)</li> <li><input type="checkbox"/> 其他(Others)</li> <li><input type="checkbox"/> 無(No assessment)</li> </ul>

強度指數 Overall Rating  系所核心能力 Core Competencies of Department	0 不 具 備  Zero	1 非 常 低  Very Low	2 低  Low	3 普通  Medium	4 高  High	5 非 常 高  Very High	評量方式 Corresponding Assessments
專業寫作與表達 Professional writing and presentation	○	○	○	○	○	○	<input checked="" type="checkbox"/> 紙筆測驗/會考 (Test/Exam) <input type="checkbox"/> 作業練習 (Assignments) <input checked="" type="checkbox"/> 口頭報告/口試 (Presentation/Oral Exam) <input type="checkbox"/> 專題研究報告(書面) (Research Report(printed on paper)) <input type="checkbox"/> 實作/實驗 (Practices/Experiments) <input checked="" type="checkbox"/> 出席/課堂表現 (Attendance/Performance) <input type="checkbox"/> 學習檔案評量 (Portfolios Assessment) <input type="checkbox"/> 自我評量/同儕互評 (Self Assessment/ Peer Assessment) <input type="checkbox"/> 作品/創作展演 (Products/Creative Performance) <input type="checkbox"/> 其他(Others) <input type="checkbox"/> 無(No assessment)

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