

 國立東華大學
教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	科學創造力教學策略專題研究			學年/學期 Academic Year/Semester	114/1
課程名稱(英文) Course Name in English	Teaching Strategy of Scientific Creativity in Science Education				
科目代碼 Course Code	SCE_71990	系級 Department & Year	博士	開課單位 Course-Offering Department	教育與潛能開發學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/陳世文				
先修課程 Prerequisite					
課程描述 Course Description					
This course aims to introduce the theory, environments, and evaluation of scientific creativity. Students learn innovative thinking, problem-solving, and interdisciplinary collaboration, which are expected to understand fostering creative culture and using tech tools for creativity. Successful cases are analyzed for practical insights, laying a foundation for future research and teaching in scientific creativity.					
課程目標 Course Objectives					
一、認識促進科學創造力之理論與研究方法。 二、了解並能應用提升科學創造力之策略。 三、培養熱心探究科學創造力及其議題的態度。					
系專業能力 Basic Learning Outcomes					課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.' s Education Objectives
A	具備科學教育專業理論發展與實踐之素養。To possess the capacity to develop and practice theories in science education				●
B	具備科學教育獨立研究素養。To possess the ability of independent study focusing on science education				●
C	具備科學教育的創新與問題解決素養。To possess creativity in science education and the ability of problem solving				●
D	具備國際學術交流之素養。To possess the ability of international academic exchanges				○
E	具備科學教學專業素養。To possess the ability and professional knowledge in science education				○
圖示說明Illustration：● 高度相關 Highly correlated ○ 中度相關 Moderately correlated					
授 課 進 度 表 Teaching Schedule & Content					
週次Week	內 容 Subject/Topics				備註Remarks
1	課程介紹Introduction				課程介紹Introduction
2	教育中創造力的定義Definition of creativity in education				Patston, T. J., Kaufman, J. C., Cropley, A. J., & Marrone, R. (2021).
3	制式與非制式科學學習的創造力Creativity across formal vs informal science learning				Martins Gomes, D., & McCauley, V. (2021).

4	創造力與科學教育的關係The relationship of creativity and science education	Hetherington, L., Chappell, K., Ruck Keene, H., Wren, H., Cukurova, M., Hathaway, C., ... & Bogner, F. (2020).
5	國慶日National Day (Holiday)	國慶日National Day (Holiday)
6	20年科學創造力研究回顧Research Review of scientific creativity is the past 2 decades	Prahani, B. K., Rizki, I. A., Suprpto, N., Irwanto, I., & Kurtuluş, M. A. (2024).
7	台灣光復節 Taiwan Restoration Day (Holiday)	台灣光復節 Taiwan Restoration Day (Holiday)
8	高等教育中的創造力 Creativity in high education	Corrêa, R., & Mourão, L. (2025)
9	期中考(Mid-term exam)	期中考(Mid-term exam)
10	如何測量創造力 How to measure the creativity across domains	Agnoli, S., Corazza, G. E., & Runco, M. A. (2016).
11	科學創造力、推理、智力的區分 Distinguishing links among scientific creativity, reasoning, and intelligence	Sternberg, R. J., Todhunter, R. J., Litvak, A., & Sternberg, K. (2020).
12	批判性思考、自我效能、科學創造力 Critical thinking, self-efficacy, and scientific creativity STEM與科學創造力 STEM and scientific creativity	Qiang, R., Han, Q., Guo, Y., Bai, J., & Karwowski, M. (2020)
13	STEM與科學創造力 STEM and scientific creativity	Eroğlu, S., & Bektaş, O. (2022).
14	ASET conference	ASET conference
15	科學創造力課程設計與實踐 1 Scientific creativity curriculum design and practice 1	Presentation and discussion
16	科學創造力課程設計與實踐 2 Scientific creativity curriculum design and practice 2	Presentation and discussion
17	2026 新年 New Year (Holiday)	2026 新年 New Year (Holiday)
18	自主學習 Self-directed learning 期末考(Final-term exam)	自主學習 Self-directed learning 期末考(Final-term exam)

教學策略 Teaching Strategies

- ☒ 課堂講授 Lecture ☒ 分組討論 Group Discussion ☐ 參觀實習 Field Trip
☐ 其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

- ☒ 問題導向學習 (PBL) ☐ 團體合作學習 (TBL) ☐ 解決導向學習 (SBL)
☒ 翻轉教室 Flipped Classroom ☐ 磨課師 Moocs

社會責任 (Social Responsibility)

- ☐ 在地實踐 Community Practice ☐ 產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

- ☐ 跨界教學 Transdisciplinary Teaching ☐ 跨院系教學 Inter-collegiate Teaching

- ☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績(含出缺席) General Performance (Attendance Record)	20%			✓	✓				
期中考成績 Midterm Exam	30%			✓					
期末考成績 Final Exam	30%	✓							
作業成績 Homework and/or Assignments	20%				✓		✓		
其他 Miscellaneous (_____)									
評量方式補充說明 Grading & Assessments Supplemental instructions									
教科書與參考書目 (書名、作者、書局、代理商、說明) Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)									
Agnoli, S., Corazza, G. E., & Runco, M. A. (2016). Estimating creativity with a multiple-measurement approach within scientific and artistic domains. <i>Creativity Research Journal</i>, 28(2), 171-176. Corrêa, R., & Mourão, L. (2025). Creativity in higher education: A systematic literature review. <i>International Journal of Educational Research</i>, 132, 102613. Eroğlu, S., & Bektaş, O. (2022). The effect of 5E-based STEM education on academic achievement, scientific creativity, and views on the nature of science. <i>Learning and Individual Differences</i>, 98, 102181. Hetherington, L., Chappell, K., Ruck Keene, H., Wren, H., Cukurova, M., Hathaway, C., Sotiriou, S., & Bogner, F. X. (2020). International educators' perspectives on the purpose of science education and the relationship between school science and creativity. <i>Research in Science & Technological Education</i>, 38(1), 19-41. Martins Gomes, D., & McCauley, V. (2021). Creativity in science: A dilemma for informal and formal education. <i>Science Education</i>, 105(3), 498-520. Patston, T. J., Kaufman, J. C., Cropley, A. J., & Marrone, R. L. (2021). What is creativity in education? A qualitative study of international curricula. <i>Journal of Advanced Academics</i>, 32(2), 207-230. Prahani, B. K., Rizki, I. A., Suprpto, N., Irwanto, I., & Kurtuluş, M. A. (2024). Mapping research on scientific creativity: A bibliometric review of the literature in the last 20 years. <i>Thinking Skills and Creativity</i>, 52, 101495. Qiang, R., Han, Q., Guo, Y., Bai, J., & Karwowski, M. (2020). Critical thinking disposition and scientific creativity: The mediating role of creative self-efficacy. <i>The Journal of Creative Behavior</i>, 54(1), 90-99. Sternberg, R. J., Todhunter, R. J. E., Litvak, A., & Sternberg, K. (2020). The relation of scientific creativity and evaluation of scientific impact to scientific reasoning and general intelligence. <i>Journal of Intelligence</i>, 8(2), 17.									
課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址) Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.) https://1drv.ms/f/c/6d9880be5ba09de1/Ejo22WHJ3ZBItwqDqNpKIroBaZveNoSvF_1LNxBLedj8DA?e=9eMK8W									
其他補充說明 (Supplemental instructions)									