課程學分數：2.00(2.00小時)

授課老師：陳雅鈴(885000)　　　　　　　　　　　　　　　　必選修：選

開課序號	0708
科目名稱	幼兒STEAM教育(ECE3710)
科目英文名稱	STEAM education for young children
授課語言	英語/國語
主要教學型態	課堂教學&小組討論
教學目標	To understand the theories of STEAM education To evaluate different models of STEAM education for young children To gain the ability of designing and developing STEAM curriculum for young children To identify teaching strategies of inquiry-based STEAM teaching To design methods for evaluating the effect of STEAM curriculum and children's performance To demonstrate proficient knowledge of STEAM lessons, activities, guiding strategies, and evaluating method for young children 瞭解STEAM 教育相關理論 評估不同幼兒STEAM 教育模式能力 具備幼兒STEAM 教育的課程發展及設計能力 瞭解探究導向的STEAM教學策略 具備設計STEAM教育成效評量的方法 具備STEAM教育的教師專業知能
每週課程內容及教學方法	LINE 群組連結: http://line.me/ti/g/2JhkC3HeJt 9/14 (1) The importance and theory of STEAM education　STEM 教育理論-Online 9/21(2)　Mid-autumn festival 9/28 (3)　　　　Multiple types of curriculum models in STEAM education STEM 課程模式 [Online] 10/5 (4) Teacher leads STEM activity and discussion [online] 10/12(5) Group leading STEM activity (1st group presentation + practice) 小組實作 10/19 (6)　　　Group leading STEM activity (2nd group presentation + practice) 小組實作 10/26 (7)　　　Group leading STEM activity (3rd group presentation + practice) 小組實作 11/2 (8)　　　Group leading STEM activity (4th group presentation + practice) 小組實作 11/9 (9)　　　Group leading STEM activity (5th group presentation

	+ practice）小組實作 11/16（10）　　　　Group leading STEM activity（6th group presentation + practice）小組實作 11/23（11）　　　　Practicum – workshop（AI application in STEM education ）工作坊補課 11/7 11/30（12）　　　　Practicum – workshop（AI application in STEM education ）工作坊補課 11/7 12/7（13）　　　　workshop（AI application in STEM education ）工作坊補課 11/7 12/14（14）　　　　STEM curriculum planning—write lesson plans in groups 小組教案撰寫討論-Online 12/21（15）　　　　STEAM curriculum design and implementation-feedback from classmates' experience（1-3 groups）教案試作 & 同學回饋 12/28（16）　　　　STEAM curriculum design and implementation-feedback from classmates' experience（4-6 groups）教案試作 & 同學回饋 1/4（17）　　　　Implementing STEM teaching in preschools（go to preschools）幼兒園實作 1/11（18）　　　　STEM teaching in preschools sharing（1-3 groups）幼兒園實作分享 online
核心能力	1.1.具備教學原理與方法論的專業 0% 2.2.具備幼兒發展與輔導的專業 0% 3.3.具備幼教課程與教學的專業 15% 4.4.具備幼教管理與社區融合的專業 0% 5.5.具備幼教藝術與科技創作的專業 55% 6.6.具備掌握全球幼教發展現況與趨勢的專業 15% 7.7.具備國際語言與社會參與的專業 15%
預期學習成果	understand the theories of STEAM education Have the ability to evaluate different models of STEAM education for young children Have the ability of designing and developing STEAM curriculum for young children Have the ability of using different Inquiry-based teaching strategies to conduct STEAM teaching Have the ability of designing methods to evaluate children s performance in STEM activities 　To demonstrate proficient knowledge of STEAM lessons, activities, guiding strategies, and evaluating method for young children 瞭解STEAM 教育相關理論 具備評估不同幼兒STEAM 教育模式能力 具備幼兒STEAM 教育的課程發展及設計能力 能運用探究導向的STEAM教學策略 　具備設計STEAM教育成效評量的方法 　具備STEAM教育的教師專業知能
與預期學習成果搭配的多元評量	Attendance + learning Attitude: 30% Discussion participation- 30% Final report: STEAM teaching plan, practice, discussion and reflection 40% 平時成績：出缺席＋上課態度：30%

	課堂討論: 事前準備及當天討論 30% 期末報告: STEAM 教學計畫、教案、實作、討論及省思 40%
主要讀本	Moomaw, S. (2013). Teaching STEAM in the early years: Activities for integrating science, technology, engineering, and mathematics. St. Paul, MN : Redleaf. 周淑惠 (2020)。幼教STEM課程。新北市:心理。
參考書目	Ritz, W. C. (2007). A head start on science: Encouraging a sense of wonder. Virginia: NSTA Press. Texley, J., & Ruud, R. M. (2017). Teaching STEM Literacy: A Constructivist Approach for Ages 3 to 8. MN: Redleaf Press. Ansberry, K. R., & Morgan, E. R. (2010). Picture-perfect science lessons: Using children s books to guide inquiry. Virginia: NSTA Press. 周淑惠 (2018)。具STEM精神之幼兒探究課程紀實:一起創建遊戲樂園主題。新北市:心理。 20周淑惠 (2018)。嬰幼兒STEM教育與教保實務。新北市:心理。 20周淑惠(2017)。面向21世紀的幼兒教育: 探究取向主題課程。新北市:心理。 (武漢市:長江出版傳媒崇文書局)
其他事項	EiE curriculum Wee engineer : https://eie.org/stem-curricula/engineering-grades-prek-8/wee-engineer http://d7.eie.org/eie-curriculum/curriculum-units [20 hands on design] https://www.youtube.com/watch?v=mNugDqQ974Y https://www.youtube.com/watch?v=NeVxOAceij0 [engineering process] 2.Puppeteering to Engineering (P2E) http://web.mit.edu/abagiati/www/p2e/index.html 3.Novel engineering https://www.novelengineering.org/ 4.Head start Engineering file:///C:/Users/user/Dropbox/Dropbox/%E5%B9%BC%E5%85%92steam%E6%95%99%E8%82%B2/Head%20start%20engineering/HSEProgramGuide_02-22-19.pdf