TCSL-70130 Interdisciplinary Curriculum & Digital Materials Design 跨領域課程與數位教材設計

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- Professor, CSIE, NDHU
- PhD, CS, University of Texas at Austin
- **Research Areas**：
  - Mobile & distributed systems
  - Clod & big data
  - IoT data
  - Data Base & Knowedge Base

Course Introduction 課程介紹

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- Students need to learn **interdisciplinary skills** to face the challenges of the fast changing world.
- **Learning technologies** and **digital instructional tools** can significantly improve the quality and effectiveness of modern classrooms.
- This course is about **interdisciplinary learning & course design** with modern **learning technologies & digital tools**.

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Main Topics 課程主題

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- **What** is Interdisciplinarity ?
- **Why** interdisciplinary learning & education ?
- Core competencies of interdisciplinarity
- Interdisciplinary learning and course design
- Digital technologies for modern instructional design

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Main Topics 課程主題

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- **AI** and **Machine Learning** technologies in interdisciplinary learning
- **Multimedia** technologies for interdisciplinary course design
- **VR/AR/MR** technologies for interdisciplinary course design
- **Cloud computing** technologies and interdisciplinary learning
- **Big data analytics** for interdisciplinary learning

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Main Topics 課程主題

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- Modern tools for course development
- Commercial tools
- Open source tools
- LMS (Learning Management Systems)
- Moodle I : Introduction
- Moodle II : Course development and learning management
- Term project & presentation

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Term Project & Presentation

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- To get hands on experience in using modern LMS for interdisciplinary course design
- Each student is required to select a subject and conduct a term project to design a digital course for the subject
- Project proposal presentation (midterm week)
- Project presentation & demonstration (one week before final)

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Semester Focus - Moodle

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- For each offering of this class, a modern LMS tool will be selected as the semester focus.
- The assignment and term project will be given and conducted based on the focused tool.
- This semester, we will study the popular LMS **Moodle**.

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Why Moodle

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- Open-source & free
- Simple interface, easy to install and use
- Highly configurable & easy customization
- Plenty of plugins
- Assessment type flexibility
- Learning analytics tools
- Feedback system
- Active global Moodle community
- Constantly improving

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Schedule

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Week	Topics
1	Introduction, Syllabus, Course information
2	What is Interdisciplinarity? Why interdisciplinary learning & education?
3	Core competencies of interdiscipline
4	Interdisciplinary learning & course design
5	Digital technologies for modern instructional design
6	Artificial Intelligence & machine learning technologies in interdisciplinary learning
7	Multimedia technologies for interdisciplinary course design
8	Virtual reality/Augmented reality/Mixed reality technologies for interdisciplinary course design
9	Project proposal presentation (midterm week)

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Schedule

Week	Topics
10	Cloud computing technologies and interdisciplinary learning
11	Big data analytics for interdisciplinary learning
12	Modern tools for course development
13	Introduction to commercial tools
14	Introduction to open source tools
15	**LMS** (Learning Management Systems)
16	**Moodle**
17	Term project presentation & demonstration
18	Final exam

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Textbooks &References

- No required textbook.
- Allen F. Repko, Rick Szostak, Michele Phillips Buchberger (Eds) ***Introduction to Interdisciplinary Studies, 3rd Edition***, SAGE Publications, Inc. 2019.
- Linda de Greef, Ger Post, Christiane Vink and Lucy Wenting. ***Designing Interdisciplinary Education: A Practical Handbook for University Teachers.*** Amsterdam University Press, 2017.
- Machiel Keestra and Steph Menken (Eds). ***An Introduction to Interdisciplinary Research: Theory and Practice.*** Amsterdam University Press, 2016.
- Heidi Hayes Jacobs (Ed). ***Interdisciplinary Curriculum: Design and Implementation.*** Hawker Brownlow Education Pty Ltd. 2004.

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References

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- Robert B. Johnson and Larry B. Christensen. **Educational Research: Quantitative, Qualitative, and Mixed Approaches, 6th Edition**. SAGE Publications, Inc. 2016.
- Scott McLeod and Julie Graber. **Harnessing Technology for Deeper Learning.** Solution Tree Press, 2018.
- J. Michael Spector. **Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives**, **2nd Edition**. Routledge, 2015.
- M. D. Roblyer and Joan E. Hughes. **Integrating Educational Technology into Teaching, 8th Edition.** Pearson, 2018.
- Judith Ann Bazler and Meta Lee Van Sickle. **Cases on Models and Methods for STEAM Education.** IGI Global, 2019.

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Moodle References

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- Susan Smith Nash and William Rice. **Moodle 3 E-Learning Course Development, 4th Edition.** Packt Publishing, 2018.
- Susan Smith Nash. **Moodle 3.x Teaching Techniques, 3rd Edition**. Packt Publishing, 2016.
- **Moodle Docs** (https://docs.moodle.org/38/en/Main_page)

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Course Information

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- **Instructor's Office**: Eng C308 理工二館 C308
- **Office Hours**: Tue 17:00-18:00
- **Phone**: (03) 869-3020
- **Email**: **showyang@gms.ndhu.edu.tw**
- **Grade**: (may change if necessary)
  - Assignment   30%
  - Final Exam   30%
  - Term Project   40%

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Web Pages

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- **Class page**: **http://web.csie.ndhu.edu.tw/show yang/IntDisCurriculum2020s/index .html**
- Not on "東華e學苑" !!
- **Instructor's homepage**: **http://web.csie.ndhu.edu.tw/sho wyang**

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Assignment 0

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- Download and install Moodle(https://moodle.org/).
- If you are new to Moodle, you may choose the standalone version by following the instruction on "Complete install packages for Windows" (https://docs.moodle.org/38/en/Complete_install_packages_for_Windows)
- Follow the online tutorial and try it out.
- **Due date**: No need to turn in anything.

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Be Ready !

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- This is a very interesting and challenging interdisciplinary course.
- Will learn the theory and practice of interdisciplinary learning.
- Will also get hands on experience on eLearning tools.

Accept the Interdisciplinary Challenge !!!

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