國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	礦物資源與環境專題			學年/學期 Academic Year/Semester	112/2
課程名稱(英文) Course Name in English	Special Topics in Mineral Resources and the Environment				
科目代碼 Course Code	NRESM0540	系級 Department & Year	碩士	開課單位 Course-Offering Department	自然資源與環境學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/蔡金河				
先修課程 Prerequisite					

課程描述 Course Description

This is a project-oriented course. Students will work on a term project investigating topics broadly related to mineral resources and the environment. It is hoped that students will learn basic scientific knowledge, analytical skill, critical thinking, and problem solving over the project work. This course emphasize hands-on activities, such as online searching, field observations, interviewing, lab visiting, group discussion, and oral presentation. Several field trips will be arrange to visit the Geological Survey and Mining Management Agency's office in Hualien, Stone and Resource Industry R&D Center, and three mining quarries.

課程目標 Course Objectives

This course aims to provide students with basic knowledge in the science of mineral resources and their environmental impacts. Topics cover a broad range of mineral deposits, with an emphasis on their formation processes and geological characteristics, and their industrial applications. Practical and environmental issues related to mining will also be addressed. After completion of this course, students will gain insight in the geology of mineral resources, the practice in the minerals industry and its environmental impacts.

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	Introduction; organization	
2	Availability of Earth and mineral resources in national and global perspectives (I)	
3	Availability of Earth and mineral resources in national and global perspectives (II)	
4	Origin of mineral deposits: introduction to ore-forming processes (I)	
5	Origin of mineral deposits: introduction to ore-forming processes (II)	
6	Description of main groups of natural resources: geology, formation processes and industrial applications (I)	
7	Description of main groups of natural resources: geology, formation processes and industrial applications (II)	
8	Environmental geochemistry and mineral resources (I)	
9	Environmental geochemistry and mineral resources (II)	
10	Mineral exploration and production	

11	Mining regulations	
12	Environmental impacts (I)	
13	Environmental impacts (II)	
14	Field trip (I)	exact date to be decided
15	Field trip (II)	exact date to be decided
16	Field trip (III)	exact date to be decided
17	Final presentation; report due	
18	Lab tour	

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 Industy-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									
期末考成績 Final Exam									
作業成績 Homework and/or Assignments	80%			✓	✓		✓		
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.)

Sanz, J. et al. (2022) Elements and Mineral Resources. Springer.
https://link.springer.com/book/10.1007/978-3-030-85889-6
Vidal, O. (2018) Mineral Resources and Energy: Future Stakes in Energy Transition. ISTE Press - Elsevier
https://www.sciencedirect.com/book/9781785482670/mineral-resources-and-energy
Revuelta, M.B. (2018) Mineral Resources: From Exploration to Sustainability Assessment. Springer
https://link.springer.com/book/10.1007/978-3-319-58760-8

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.)

其他補充說明 (Supplemental instructions)