國立中正大學課程大綱

National Chung Cheng University

Course Syllabus

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| 學年/學期(Academic Year / Semester) | | 114-2 | |
| 課程名稱<br>(Course name) | **ENVIRONMENTAL AND SOIL SCIENCES** | | |
| 課碼(Course code) | 2015009 / 2708021 | 學分數 Credit(s) | 3 |
| 授課教師(Instructor) | Chien-Yen Chen<br>Email: chien-yen.chen@oriel.oxon.org<br>Tel: +886-5-2720411 ext. 66220 | | |
| | ■ Professor □Associate Professor □Assistant Professor | | |
| 授課方式<br>(teaching methods) | □ Lab □ Seminar ■ Student Presentation ■ Lecture □ other | | |
| 先修科目(Prerequisite) | No | | |
| 課程介紹與教學目標<br>(Course Description and Objectives) | **Course Description** (3 credits): This course will *review and introduce the chemical principles* necessary to critically examine the soil environment, *describe the soil solid and solution phases*, and *identify the chemical processes* that occur in the soil environment and ultimately impact the fate and behavior of substances in soil and other natural water systems.<br><br>**Objectives:** The objective of this course is to introduce individuals entering the environmental sciences and closely aligned fields to the innate complexity and interconnectedness of the processes that occur in the natural environment. | | |
| 教科書及參考書<br>(Textbooks and References) | Essington, M.E. 2003. *Soil and Water Chemistry: An Integrative Approach* CRC Press, Boca Raton, FL | | |
| 學習評量與成績配分<br>(Assessment and Grade scale) | Exam-1…….20% (Week-08)<br>Exam-2…….30% (Week-16)<br>Homework……20%<br>Oral Presentations…….30% | | |
| 課程要求<br>(Course Requirements) | Attendance is required. | | |

| 課程進度(Course Schedule) | |
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| Week | Contents |
| Week 01 | The soil environment: an overview |

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| Week 02 | Elements in the soil environment: soil concentrations, valencies, and species |
| Week 03 | Soil properties: Mass-volume relationship |
| Week 04 | Soil properties: Soil texture and structure |
| Week 05 | Soil properties: Soil CEC |
| Week 06 | The primary silicates |
| Week 07 | Clay minerals and accessory minerals |
| Week 08 | **Mid-term Exam** |
| Week 09 | Chemical weathering |
| Week 010 | The determination of soil carbon concentrations |
| Week 011 | Oxidation-reduction of pe |
| Week 012 | Redox potential measurements and redox reaction sequences in neutral soils |
| Week 013 | Soil pH and pH measurements |
| **Week014** | Genesis of soil acidity |
| Week 015 | Specific Topic Lecture by students |
| Weel016 | **Final Exam** |
| Weel017 | Specific Topic Lecture by students |
| Weel018 | Specific Topic Lecture by students |