

Course Information	
Course title	Environmental Planning and Management
Semester	114-2
Designated for	COLLEGE OF ENGINEERING English-Taught Intelligent Engineering and Technology Undergraduate Program
Instructor	Hsing-Jui Wang
Curriculum Number	EnvE7090
Curriculum Identity Number	541EM4050
Class	
Credits	3.0
Full/Half Yr.	Half
Required/ Elective	Required
Time	Monday 7,8,9(14:20~17:20)
Remarks	The upper limit of the number of students: 30.
Course introduction video	
Table of Core Capabilities and Curriculum Planning	Association has not been established
Course Syllabus	
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Course Description	Environmental problems are inherently characterized by multiple objectives, open system interactions, and various sources of uncertainty. Environmental planning and management aims to address identified environmental issues through a two-stage process of planning and management, with the ultimate goal of achieving effective environmental quality control. This course focuses on the application of systematic analytical frameworks to environmental problems, emphasizing optimization-based decision analysis, quantitative methods, and systems analysis. Students will learn how to structure complex environmental problems, integrate environmental data, and evaluate alternative management strategies to support informed and rational decision-making under uncertainty.

Course Objective	1. Systematically analyze environmental problems and describe them using both qualitative and quantitative approaches. 2. Develop an overview of commonly used environmental decision-analysis methods, including optimization and systems-based techniques. 3. Apply the methodologies introduced in the course to integrate environmental data with real-world problems and formulate systematic analyses and optimization-based decision recommendations.																		
Course Requirement	Students are expected to have: - Fundamental knowledge of environmental engineering, and - Basic understanding of statistics and environmental economics.																		
Student Workload (Expected weekly study hours before and/or after class)																			
Office Hours	Appointment required.																		
Designated reading	待補																		
References	- Lecture notes - Barrow, Christopher J., 2006, Environmental management for sustainable development 2nd ed., Routledge, Taylor & Francis Group, London and New York - Lein, James K, 2003, Integrated environmental Planning, Blackwell Science Ltd., Oxford. - Barrow, Christopher J., 2006, Environmental management for sustainable development 2nd ed. - Routledge, Taylor & Francis Group, London and New York Randolph, John, 2012, Environmental land use planning and management 2nd ed., Island press - Department for Communities and Local Government, London, 2009, Multi-criteria analysis: a manual - Chang, Ni-Bin, 2011, System analysis for sustainable engineering, theory and application, the McGraw-Hill Companies, Inc.																		
Grading	<table border="1"> <thead> <tr> <th>No.</th><th>Item</th><th>%</th><th>Explanations for the conditions</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Assignments & Attendance</td><td>40%</td><td></td></tr> <tr> <td>2.</td><td>Mid-term Exam</td><td>25%</td><td></td></tr> <tr> <td>3.</td><td>Final Projects</td><td>35%</td><td></td></tr> </tbody> </table> 1. NTU has not set an upper limit on the percentage of A+ grades. 2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN UNIVERSITY Regulations Governing Academic Grading are for reference only. Instructors may adjust the percentage ranges according to the grade definitions. For more information, see the Assessment for Learning Section .			No.	Item	%	Explanations for the conditions	1.	Assignments & Attendance	40%		2.	Mid-term Exam	25%		3.	Final Projects	35%	
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Adjustment methods for students	Teaching methods	
	Assignment submission methods	
	Exam methods	
	Others	Negotiated by both teachers and students

Progress

Week	Date	Topic
Week 1	2/23	Course Introduction
Week 2	3/02	Introduction to Environmental Planning & Management and Basic Data Analysis using Python I
Week 3	3/09	Introduction to Environmental Planning & Management and Basic Data Analysis using Python II
Week 4	3/16	Cost-Benefit Analysis
Week 5	3/23	Statistical Decision-Making Analysis
Week 6	3/30	Analytic Hierarchy Process (AHP)
Week 7	4/06	Public Holiday
Week 8	4/13	Mid-term exam
Week 9	4/20	Principal Components Analysis (PCA)
Week 10	4/27	Factor Analysis (FA)
Week 11	5/04	Fuzzy Theory
Week 12	5/11	Bayesian Inference System
Week 13	5/18	Bayesian Hierarchical Theory
Week 14	5/25	Paper Discussion
Week 15	6/01	AI application in EPM
Week 16	6/08	Term Project Presentation