Urban Environmental Systems Management

Code	Credit Hours
URP 810	3-0

Course Description

This course introduces the information technologies with respect to Water environment, water management in sustainable buildings, Urban water use and malfunctioning sewerage systems in urban infrastructure, Risk assessment in Urban Environment, and Global climate changes.

Reference Books:

1. Keisuke Hanaki, (2008), Urban Environmental Management and Technology, Springers.
2. Robert Willis, Brad A. Finney, (2004), Environmental systems engineering and economics, Kluwar Academics Publishers
3. Ah Foong Foo, Belinda K. P. Yuen, (1999), Sustainable cities in the 21st century, National University of Singapore
4. Amro El Baz, Environmental Systems Analysis and Management, VDM Verlag (2010)
5. Osman Akan, Robert J., Houghtale. Urban hydrology, hydraulics, and stormwater quality: engineering, USA. (2003)
6. Albert K. W. Yeung, G. Brent Hall, Spatial database systems: design, implementation and project management, Springers, (2007)
7. Larry W. Canter, Environmental Impact Assessment (2nd Edition), McGraw Hill, 1995

Prerequisites

Nil

Assessment System for Theory

Quizzes	10-15%
Assignments	5-10%
Mid Terms	25-30%
ESE	40-45%
Term Project	10-15%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Overview of Information Technologies	Introduction to the course, learning objectives, teaching plan, and assessment methods. Key components of IT: Hardware, Software, Networking, virtual spaces, cybersecurity and Artificial Intelligence

2-3	Urban Water	Urban water cycle Urban water environment, Water management in sustainable buildings, Urban water uses and malfunctioning sewerage systems Urban water infrastructure
4-5	Risk Assessment	Identification of environmental hazards Assessment of vulnerability and exposure Impact Analysis and Risk Quantification Development of mitigation strategies
6-7	Urban Heat Environment	Heat and energy management, Global climate changes, strategies for global warming issues and energy conservation in buildings, Management of urban heat environment
9	**MID SEMESTER EXAM**	
10-11	Application of Remote Sensing	Application of remote sensing techniques on environmental infrastructure systems
12-13	Database Management for Decision-Making	The development of infrastructure system databases to assist complex decision-making on environmental infrastructures.
14	Environmental Justice	What is environmental justice? Historical context of environmental disparities Prevalence of environmental justice issues in the world Policy and Advocacy for environmental jsutice

15	Nature-based Solutions	What is Nature-based solutions (NbS), types and application of NbS, direct and co-benefits
16-17	Sustainable Cities	Sustainable cities in 21st century in terms of design, planning and human settlement.
18	**END SEMESTER EXAM**	