

**All-English Graduate Curriculum on Environmental Informatics and Risk Management
(CEIRM, Taiwan's only All-English EIRM Graduate Curriculum)**



<http://www.bse.ntu.edu.tw/main.php>

**Department of Bioenvironmental Systems Engineering
National Taiwan University**

Program overview

In light of its unique geographic and environmental characteristics, Taiwan is particularly vulnerable to natural disasters. Findings from many studies have demonstrated that climate changes can result in much greater impacts to island-countries like Taiwan than other continental countries. It is therefore of vital importance for both government agencies and engineering consultancy firms to rely on environmental data and information for sound engineering practices and decision making in disaster remediation, ecological restoration, soil and water conservation, adaptation to climate changes, etc. This comprehensive curriculum provides an integrated and multidisciplinary program that spans a very wide spectrum including environmental database building and analysis, environmental monitoring and instrumentation, landscape ecological measuring and planning, restoration ecology, spatiotemporal stochastic modeling and simulation, risk assessment and management, environmental system/process modeling, and climate change impact assessment.

The CEIRM emphasizes not only the fundamental theories and computer skills for environmental modeling and risk assessment, but also practical applications to solve real world problems. A few such applications include quantitative assessment of the climate change impact on urban inundation, drought indicators and drought forecasting, ecological indicators for river ecology restoration, evaluating the effect of urbanization on diurnal temperature variations, etc.

Curriculum structure

Courses offered in CEIRM are structured into four tiers to facilitate the needs of students of different career goals.

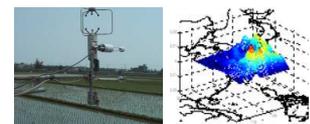
Environmental instrumentation/monitoring

- Microclimate
- Environmental Monitoring and Instrumentation of Biophysics



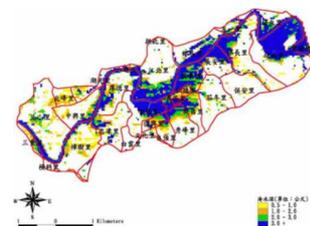
Informatics

- Spatial data analysis
- Remote sensing
- Database System
- Geographic Information System



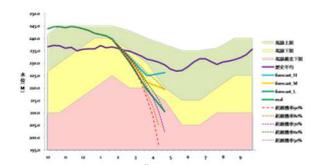
Theories and algorithms

- Spatiotemporal analysis and mapping in environmental systems
- Geostatistics
- Engineering Economics
- Stochastic Programming and Simulation
- Restoration ecology: theories and applications
- Environmental statistics and risk assessment



Applications

- Climate change and environmental ecology
- Dynamic modeling the bioenvironmental systems
- Landscape ecological measuring and planning
- Practical work on environmental impact assessment
- Modeling landuse change and impacts
- Urban inundation modeling



Careers

Through study in the Curriculum of Environmental Informatics and Risk Management, students will gain a wide range of theoretical and practical knowledge that facilitate their careers in academic research, professional practices, and environmental/engineering risk management in both government and private sectors. Some potential professionals for graduates of this curriculum include GIS and remote sensing specialists, water resources engineers, environmental consultancy, environmental planning managers, and risk analysts.

CEIRM Faculty

Name (email & webpage)	Title	Specialties
Hung-Pin Huang benhuang@ntu.edu.tw http://140.112.76.165/	Professor	Soil and water conservation, environmental impact assessment, sediment transport and hydraulic engineering
Ming-Daw Su sumd@ccms.ntu.edu.tw http://140.112.76.191/	Professor	Geographic information systems, irrigation management, water resources planning and management, spatial decision support systems
Ke-Sheng Cheng rslab@ntu.edu.tw http://www.rslabntu.net/	Professor	Stochastic hydrology, satellite remote sensing, environmental statistics and risk assessment, geostatistics, stochastic simulation and modeling of hydrological processes
Ching-Pin Tung cptung@ntu.edu.tw http://sdl.ae.ntu.edu.tw/	Professor	Environmental change impact assessment, environmental systems analysis, sustainable soil and water resources management
Yu-Pin Lin yplin@ntu.edu.tw http://homepage.ntu.edu.tw/~yplin/	Professor	Ecohydrological monitoring and modeling, land-use change modeling, landscape ecological modeling and planning, system dynamic modeling, spatial analysis and modeling, ecosystem services
Cheng-I Hsieh hsieh@ntu.edu.tw http://140.112.63.212/mainC.htm	Associate Professor	Environmental biophysics, boundary layer climate, environmental fluid mechanics
Hwa-Lung Yu hlyu@ntu.edu.tw http://homepage.ntu.edu.tw/~hlyu/index.html	Professor	Environmental information synthesis modeling, temporal GIS and numerical development of advanced functions, human exposure and integrative risk assessment, spatiotemporal stochastics and geostatistics
Rita Sau-Wai Yam ritayam@ntu.edu.tw http://homepage.ntu.edu.tw/~ritayam/	Assistant Professor	River and wetland ecology, ecosystem functioning, ecological restoration, conservation biology
Ming-Che Hu mchu@ntu.edu.tw http://researcher.nsc.gov.tw/mchu/ch/	Associate Professor	Environmental system planning, energy policy simulation, system analysis, uncertainty analysis

Scholarships and assistantships

Scholarships and assistantships are available through several channels including government agencies, National Taiwan University, and project funding.

Application for study at NTU

<http://www.oia.ntu.edu.tw/oia/index.php/doc/view/sn/55/lang/en>