

Applied Environmental Data Sciences, Academic Certificate

Coastal communities face unprecedented environmental challenges such as frequent and intensified floods and droughts, uncertain availability of water resources, harmful algal blooms, and deteriorating water and air quality. These challenges become more complex due to ever-changing socio-environmental factors such as increasing demand caused by rapid population growth, industrial development, urbanization, and climate change. Finding convergent solutions to these issues demands well-coordinated teamwork and a new outlook toward student research and education across the engineering, sciences, and humanities disciplines along with active engagement of communities. Such challenges call for a user-friendly decision-making and visualization framework that couples timely hydrological, hydrogeological, topographical, climatic, physicochemical, land use/land cover, biological, and social-economic data. Upon completing this certificate, students and professionals will be able to

- Develop a data-driven mindset based on a comprehensive understanding of the latest data science tools to solve intensified environmental sustainability issues that are faced by communities.
- Apply these tools to facilitate the implementation of data-driven, science-based resources management, improve the understanding of the scale-dependent behavior of environmental systems, and provide sustainable solutions to the regional communities and ecosystems.

This certificate is open to graduate students and professionals. Students will receive the certificate upon completing all required coursework with a grade of B or better.

Admission Requirements:

A four-year degree in STEM and education fields, or students satisfying concurrent enrollment criteria of TAMUK graduate classes.

Required Coursework

To earn the certificate, students must complete the following four courses (12 credit hours) with a grade of B or better:

Code	Title	Semester Credit Hours
EVEN 6349	Grad Prof Skills Developmt Lab	3
EVEN 6347	Data Science for Next Generation of Community Researchers	3
Select two courses from the following:		6
EVEN 6345	Environmtl Sustain&Resilience	
EVEN 6332	Environmental Data Analysis	
EVEN 6318	Environmental System Modeling	
EVEN 6341	Enviromental Informatics	
EVEN 6311	Air Quality Modeling	
EVEN 6312	Surface Water Quality Modeling	
EVEN 6313	Groundwater Contamin Transport	
EVEN 6340	Decision Sci for Environ Systm	
EDBL 6391	Adv Topics in Bilingual Ed I	
EDBL 6393	Adv Topics in Bilingual Ed II	
MEEN 6321	Adv Eng Data Analysis & Opt	
IEEN 5320	Fundamentals Sustainable Eng	
IEEN 5327	Adv Engineering Project Mnmt	
PSYC/SOCI 5310	Data Analys in Social Research	
PSYC 5331	Lifestyles and Career Devel	
SOCI 5302	Sem in Social Organization	
SOCI 5303	Advanced Research Methods	
ENVS 5310	Sustainable Landuse Dec & Mgmt	
ENVS 5320	North America Wetlands	
ENVS 5330	Sustainability of Eviron Ecosy	
ENVS 5340	Soil and Water Conservation	
ISYS 5351	Databases & Data Warehousing	
ISYS 5352	Exp. Data Analysis & Visual	
ISYS 5353	Predictive Analytics	

MGMT 5370	Leadership, Change & Innovat.
MKTG 5350	Crisis Communication & Manag.
Total Semester Credit Hours	
12	