EVT 175 Watershed Management

Course Description: A course on developing watershed action plans including economic redevelopment and brownfield development. Topics include: water quality monitoring, stream bank stabilization, flood management strategies, habitat restoration, and control of combined and sanitary sewer overflow. Students provide transportation to off-campus field trips.

Prerequisites(s): EVS 110, and CHE 110 or CHE 121 or CHE 131

Corequisite(s): No corequisite

Lecture Hours: 2	Lab Hours: 3	Credit Hours: 3
Lab Fee: 90	Supplemental Fee: 0	Purpose:
☐ Transfer Assurance Guide Course (TAG)	☐ Transfer Module Course (TM)	
Course Format: Lec/Lab	Grading: A/B/C/D/F/I	
Delivery Method: □ Web	□ Hybrid	☒ Classroom
Semesters Offered: □ Fall	☒ Spring	□ Summer

Course Primary Text:

Title: Handbook for Developing Watershed Plans to Restore and Protect Our Waters. EPA 841-B-08-002, March 2008	Edition: 2
Author(s): U.S. Environmental Protection Agency	
Publisher: U.S. Environmental Protection Agency	

Supplemental Materials:

Ohio Environmental Protection Agency, Division of Surface Water. 1997. A Guide to Developing Local Watershed Action Plans in Ohio.
Harrelson, Cheryl C; Rawlins, C. L.; Potyondy, John P. 1994. Stream channel reference sites: an illustrated guide to field technique. Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 p.

Course Outcomes:

1	Learn the physical, chemical and biological components that make up a stream
2	Understand how a watershed affects stream quality

3	General understanding of local, state and federal laws associated with streams and wetlands
4	Knowledge of how to prepare watershed plan
5	Understanding of funding from public and private sector
6	Understanding of basic water quality structures and use
7	Understanding of Ecosystem Restoration techniques
8	Identification of watershed problems and solutions
9	Identification of socio economic groups and how to communicate
10	Knowledge of trends in Watershed Management affecting future opportunities

Course Topics:

Week 1	Hydrologic Cycle & Surface Water Hydrology; Watersheds: Scale and Delineation; Water Resources – Quality and Quantity; Watershed Characteristics; Careers in Water Quality
Week 2	Overview of the Watershed Planning Process; Water Quality Standards – chemical, physical, biological; Ohio's Water Quality Standards; Causes and Sources of Water Pollution, Stream Characteristics and Regulatory Requirements
Week 3	Build Partnerships; Strategies for Characterizing the Watershed & Public Participation; Watershed scope; Public Participation: Non-profits, Partnerships and Community Participation; Watershed Master Plans review.
Week 4	Define Scope of Watershed Planning Effort; Gathering Existing Data & Inventory; Mapping & GIS for data analysis; Watershed/Stream Assessment Methods/Tools.
Week 5	Identify Data Gaps and Collect Additional Information; Analyze Data to Characterize the Watershed and Pollutant Sources; Defining Problems (non-attainment of WQS, Flooding, Stormwater, CSO & SSO); ID Water Resource Concerns & Relationships (Causes/Sources, Stressor, Impact, Impairment)
Week 6	Estimate Pollutant Loads; Data collection, pollutant sources, modeling estimate loads; Field Trip: Buttercup Valley. Observe watershed characteristics and problems.
Week 7	Set Goals and Identify Load Reductions; Restoration Strategies; Real world strategies for Point and Non-Point Source Pollution: habitat restoration, riparian buffers, Stormwater control, erosion and sediment control, flood control, green infrastructure, BMPs. Case studies of successful restorations. Site visit to Caldwell Park Restoration.
Week 8	Identify Possible Management Strategies**;** Prioritizing Strategies and Finding Support (public, financial); Community participation in prioritization; Public-Private Partnerships; Multi-objective Decision Making**:** Combining environmental and economic goals; Watershed BMPs (Lab and Field)
Week 9	Evaluate Options and Select Final Management Strategies, Review of Plan Sets for Bioretention Pond; Guerley Road Stormwater Retention; Floodplain Wetland Park (Morris Farm); Two Stage Channel; Twin Creek Preserve; Hartwell Mill Creek Restoration
Week 10	Field trip to view: Watershed Problems and BMPs (West Chester); Bioretention Pond; Floodplain Wetland Park (Morris Farm); Wet Retention (Duke Realty); Two Stage Channel; Dry Detention; Concrete-lined Channels; Impervious Surface.
Week 11	Design Implementation Program; Implement Watershed Plan; Develop Outline and Assign Tasks For Watershed Plan, Work on Concepts; Visit Lick Run, Rapid Run and Guerley Road Retention
Week 12	Watershed Master Planning in Cincinnati; Final exam, Visit Alm Park Restoration
Week 13	Student Presentations & Final Watershed Plan Report Due

Week 14	Extra credit for attending Watershed Meetings, Water Quality Workshops, MSDGC Presentations
Week 15	

Methods of Evaluation/Assessment

□ Formative: □ Summative

List assessment activities (e.g. quizzes, discussions, essays, research papers, debates, oral presentations, exams):

Mid term Exam
Final Exam
Research and prepare a portion of a Watershed Plan
Present Watershed Plan for portion of grade

Course Keeper: Warren C. High Date Completed: 09 April 2019