

Engineering for Developing Communities (EDC) Curriculum in Environmental Engineering



March 2009

Degree Approaches

- Plan I: MS thesis -7 required and 1 elective course plus 2 semesters of thesis research
Plan II A: Field project based - 7 required, 1 elective, and 2 project-based courses (Project I and II)
Plan II B: Course work only (limited to students with extensive prior field experience) -7 required & 3 elective courses

Required Courses

- 1) CVEN 5834 Sustainable Community Development I (SCD I, Fall Only)
- 2) CVEN 5834 Sustainable Community Development II (SCD II, Spring Only)
- 3) CVEN 5834 Water, Sanitation and Hygiene (WASH, Fall only)
- 4) CVEN 5834 Environmental Engineering Processes (Fall only)
- 5) CVEN 5404 Env. Engineering Chemistry **or** CVEN 5484 Env. Engineering Microbiology
- 6) Environmental Engineering Treatment course
(CVEN 5524 Water **or** CVEN 5534 Wastewater **or** CVEN 5474 Hazardous Waste)
- 7) Sustainability course (several options)

Core EDC Courses

Sustainable Community Development I (SCD I)

SCD I provides a background and framework for sustainable community development based on a participatory model. A *public health perspective* is emphasized, covering an overview of development and global health concepts and issues as they apply to developing communities. Through didactic, readings and class discussion, the health and interrelated challenges facing the world's poorest 4 billion people, along with potential solutions are discussed.

Sustainable Community Development II (SCD II)

SCD II covers the principles, practices, and strategies of *appropriate technology* as part of an integrated and systems approach to community-based development. Course content areas include technical issues in development, environmental health and communicable disease, appropriate and sustainable technologies with hands-on workshops, and global cooperation in development.

Water, Sanitation, and Hygiene (WASH)

- Can be taken as a 3 credit hr course or
- 1 credit hr course (fall) followed by a 2 credit hr course (following fall)
- First 5 weeks – Sanitation, Hygiene & Water Quality- also offered as a 1 credit hour course to non-environmental engineers
- Last 10 weeks – Appropriate water and wastewater treatment – also offered as a 2 credit hour course for students who have previously taken the 1 credit version

EDC Project I

Field Practicum in preparation for an extended internship in a developing community. This intensive short-course will provide an opportunity for supervised practical application of previously studied theory so that students are prepared to participate in an extended field internship without faculty supervision.

EDC Project II

Field Internship with EDC partner organization.

Continuing EDC Courses:

Global Issues in Water, Sanitation, and Hygiene (CVEN 5834, Klees).
Sustainability and the Built Environment (CVEN 4/5700, available via CAETE)

Potential Electives – for all EDC Students

- Up to half the coursework can be outside CVEN/AREN (per dept. rules)
- Up to 6 credit hours can be 4000-level courses outside the department.

CVEN 5393 Water Resources Development and Management - fall

CVEN 5484 Environmental Microbiology - spring

CVEN 5524 Drinking Water Treatment - spring

CVEN 5534 Wastewater Treatment - spring

CVEN 5474 Hazardous Waste Management - fall

CVEN 5323 Applied Stream Ecology - fall

GEOG 5100-007 Evaluation of Development Projects (Fall 2007)

GEOG 5762 Sustainable Development: Theory and Classic Issues (taught infrequently)

GEOG 5772 Sustainable Development: Institutions and Policy (taught infrequently)

GEOG 5782 Sustainable Development: Critique - fall (taught infrequently)

ECON 4535 Natural Resource Economics

ECON 4545 Environmental Economics

EBIO* 4030/5030 Limnology

EBIO* 4160/GEOL 4160/ENVS 4160 Introduction to Biogeochemistry

EBIO* 4180 Ecological Perspectives on Global Change

ENVS 5810 Climate, Water Resources, and Environmental Sustainability

GEOL 4716 Environmental Field Geochemistry

JOUR 6211 Communication and International Development

BADM 4820- Social Entrepreneurship in Emerging Economies (Summer 2008, Term B)

MBAX 6845: Social Entrepreneurship in Emerging Markets (Fall 2007)

Others allowable with prior approval by EDC faculty advisor

*EBIO courses were formerly "EPOB"

For general information, contact:

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For specific academic advising, please contact your assigned faculty advisor. Students need to speak with their faculty advisor to determine the best course sequence on a case-by-case basis.

ENVIRONMENTAL ENGINEERING MS DEGREE – EDC TRACK

For EDC students with BS degrees in Environmental Engr. (or Civil Engr. with Environmental option)

	Year 1	Year 2
Fall	SCD I WASH (3 credit) Env. Engineering Processes Env. Engineering Chemistry or Sustainability Course	Sustainability Course or Env. Engineering Chemistry Env. Engineering Treatment course (Hazardous Waste) Research (for Plan I) <i>(Potential Graduation in Dec. for Plan IIA)</i>
Spring	SCD II Env. Engineering Treatment course (Water or Wastewater Treatment) Env. Engineering Microbiology or Sustainability Course	Sustainability Course or Env. Engineering Microbiology Research (for Plan I) <i>(Graduation in May)</i>
Maymester	Project I – Field Practicum (for Plan IIA)	
Summer	Project II – Field Internship (for Plan IIA) or Research (for Plan I)	

Bolded courses must be taken during the semester shown above. Other courses maybe taken at any time during the program as long as prerequisites are met.

ENVIRONMENTAL ENGINEERING MS DEGREE – EDC TRACK

For EDC students with BS degrees in other engineering or non-engineering areas

	Year 1	Year 2
Fall	SCD I Env. Engineering Processes WASH (1 credit version =First 5 weeks of sem.) Env. Engineering Chemistry or Sustainability Course	WASH (2 credits version = last 10 weeks of sem.) Sustainability Course or Env. Engineering Chemistry Research (for Plan I)
Spring	SCD II Env. Engineering Treatment course (Water Treatment & sit in on CVEN 3424 wastewater lectures or Wastewater Treatment & sit in on CVEN 3424 water lectures) Env. Engineering Microbiology or Sustainability Course	Project II – Field Internship (for Plan IIA) Sustainability Course or Env. Engineering Microbiology Research (for Plan I students) <i>(Graduation in May)</i>
Maymester	Project I – Field Practicum (for Plan IIA)	
Summer	Research (for Plan I)	

Bolded courses must be taken at the times listed above. Other courses maybe taken at any time during program as long as prerequisites are met.

CIVIL SYSTEMS MS DEGREE – EDC TRACK

Students should contact their faculty advisor to discuss requirements.