

Table 3.4a Outcomes Mapped to Curriculum

		EGN1006L Intro to Engineering Professions	EGN1041C Problem Solving and Design	EGM3420C Engineering Mechanics	EGN3331C Mechanics of Materials	EGN2111C Engineering Graphics	EGN5641C Engineering Entrepreneurship	CWR3201C Engineering Fluid Mechanics	EGN3833C Engineering Service Learning	CWR 3202C Hydraulics	ENV3006C Fundamentals of Env Engineering	CEG3011C Soil Mechanics	CGN 3323C Surveying and Geomatics	EGN4410L Senior Design I	CCE4031C Project Planning and Regulations	CWR4540C Water Resources Design	EGN4411C Senior Design II	ENV4417C Water and Wastewater Treatment	EES 3204C Environmental Chemistry for Engineers	ENV4341C Solid and Hazardous Waste Management	ENV4101C Elements of Atmospheric Pollution	ENV4612C Sustainability in Engineering	CWR 3202C Hydraulics (and Hydrology for Class 200	Environmental Microbiology	Physical Geology	
	credit hours	1	2	4	3	2	3	3	2	3	3	3	3	1	3	3	3	3	3	3	3	3	3	4		
	Environmental Outcomes																									
a.	an ability to apply knowledge of mathematics through differential equations									X									X							
	calculus based physics			X				X		X	X															
	chemistry																	X	X							
	biology																	X								
	earth science, and fluid mechanics							X			X													X		X
b.	an ability to design and conduct experiments in environmental engineering, as well as to analyze and interpret data in at least two environmental engineering																	X	X	X						
c.	an ability to design an environmental engineering system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturing, and sustainability.									X	X				X		X	X								
d.	an ability to function on multi-disciplinary teams;						X	X	X				X				X									
e.	an ability to identify, formulate, and solve engineering problems	X			X		X	X	X	X	X			X		X		X	X	X	X	X	X			
f.	an understanding of professional and ethical responsibilities	X					X	X	X						X		X									
g.	an ability to communicate effectively				X	X	X	X	X			X	X	X	X		X			X				X		
h.	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;						X		X		X	X			X					X	X	X				
i.	a recognition of the need for, and an ability to engage in life-long learning;								X					X	X		X			X	X	X				
j.	a knowledge of contemporary issues						X				X			X	X		X			X	X	X				
k.	an ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practice.;												X			X	X	X		X						
l.	an understanding of entrepreneurship and an ability to write a business plan;						X		X																	
m.	an ability to define a community problem and to use the engineering design process to deliver a solution;						X																			
n.	proficiency in water, wastewater, air, and solid and hazardous waste																	X								
o.	an understanding of the roles and responsibilities of public institutions and private organizations pertaining to environmental engineering																			X		X				
p.	an ability to explain the importance of professional licensure																X									

Table 3-4b Assignment of Courses to Outcome Assessment

a	an ability to apply knowledge of mathematics through differential equations	CWR 3201C Engineering Fluid Mechanics, ENV 3006C Fundamentals of Environmental Engineering
	calculus based physics	EGM 3420C Engineering Mechanics
	chemistry	ENV 4417C Water & Wastewater Treatment
	biology	ENV 4417C Water & Wastewater Treatment
	geology	CEG 3011C Soil Mechanics
	fluid mechanics	CWR 3201C Engineering Fluid Mechanics CWR 3202C Hydraulics
b	An ability to design and conduct experiments as well as to analyze and interpret data, pertaining to EnvE systems	CWR 3202C Hydraulics ENV 4417C Water & Wastewater Treatment ENV 4341C Solid & Hazardous Waste Mgmt
c	an ability to design a system, system component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability in more than one environmental engineering discipline	CWR 4540C Water Resource Design ENV 4417C Water & Wastewater Treatment EGN 4411C Engineering Senior Design II
d	an ability to function on multidisciplinary teams;	EGN 3833C Engineering Service Learning EGN 3641C Engineering Entrepreneurship EGN 4411C Engineering Senior Design II
e	an ability to identify, formulate, and solve engineering problems	CWR 4540C Water Resource Design ENV 3006C Fundamentals of Environmental Engineering CWR 3202C Hydraulics ENV 4417C Water & Wastewater Treatment

f	an understanding of professional and ethical responsibility;	EGN 3833C Engineering Service Learning EGN 3641C Engineering Entrepreneurship ENV 3006C Fundamentals of Environmental Engineering CCE 4031C Project Planning & Regulations EGN 4411C Engineering Senior Design II
g	an ability to communicate effectively	CWR 3201C Engineering Fluids Mechanics ENV 4341C Solid and Haz. EGN 4411C Engineering Senior Design II
h	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;	ENV 3006C Fundamentals of Environ Engrg ENV 4612 Sustainability in Engineering CEG 3011C Soil Mechanics
i.	a recognition of the need for, and an ability to engage in life-long learning;	CCE 4031C Project Planning & Regulations EGN 4411C Engineering Senior Design II ENV 4341C Solid & Hazardous Waste Mgmt
j.	a knowledge of contemporary issues	ENV 3006C Fundamentals of Environ Engrg ENV 4612 Sustainability in Engineering
k.	an ability to use the techniques, skills, and modern engineering tools necessary for civil engineering practice	CWR 4540C Water Resource Design CGN 3323C Surveying and Geomatics EGN 4411C Engineering Senior Design II
l	an understanding of entrepreneurship and an ability to write a business plan;	EGN 3833C Engineering Service Learning EGN 3641C Engineering Entrepreneurship
m	an ability to define a community problem and to use the engineering	EGN 3833C Engineering Service

	design process to deliver a solution;	Learning EGN 3641C Engineering Entrepreneurship
n	Proficiency in water, wastewater, air and solid waste	CWR 3202C Hydraulics CWR 4540C Water Resource Design ENV 4417C Water & Wastewater Treatment ENV 4341C Solid & Hazardous Waste Mgmt ENV 4101C Atmospheric Pollution
o	an understanding of the roles and responsibilities of of public institutions and private organizations pertaining to environmental engineering	CCE 4031C Project Planning & Regulations ENV 4612 Sustainability in Engineering
p.	An understanding of the importance of professional licensure	EGN 4411C Engineering Senior Design II

Table 4-2 Continuous Improvement for Criterion 1

Criterion 1. Students			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
Faculty and advising staff recognition in AY2006-07 that course and career advising/mentoring could benefit from regularly scheduled group events for students	Scheduling of 'drop by' course registration & mentoring events each semester	First event held in Spring 2007 (for registration for Fall 2007 courses); held each semester since that time	Events are popular and successful as an alternative to students scheduling individual appointments, especially for course registration
Identified need at the University level for on-line degree evaluation system accessible by students, advisors, and faculty	Creation of on-line Curriculum, Advising & Program Planning (CAPP) system	First brought on-line in AY2008-09	In AY2008-09 being used by the WSOE Academic Advisor on a trial basis; will be up and fully operational for students on the AY2009-10 catalog
2007 Advisory Board recommendation to plan for growth in the WSOE with recognition by the WSOE leadership that increased student body quality should promote short-term enrollment(s) management	Fall 2008 recommendation for increased engineering admissions standards formulated by WSOE Recruitment and Retention Committee; brought to WSOE Curriculum Committee; and then submitted to the University Curriculum Team	New standards have been approved by UCT in Spring 2008 for implementation in AY2009-10	Students on AY2009-10 catalog now subject to new admissions standards

Table 4-3 Continuous Improvement for Criterion 2

Criterion 2. Program Educational Objectives			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
2007 Advisory Board recommendation to ensure that graduating seniors are eligible to take the FE exam under Florida regulations; and faculty recognition of importance that graduates are well prepared to pass the exam	Dr. O'Neill (Chair, Dept. Environmental and Civil Engineering) worked with state authorities to ensure that first graduates can sit for the FE in Spring, 2009; WSOE faculty (including Environmental and Civil Engineering) enlisted to teach FE review course (non-credit)	Request to hold the FE exam at FGCU in April, 2009 was approved; faculty taught FE review course in Spring, 2009	FE held on FGCU campus April 25, 2009 for first program graduates. All 4 Environmental Engineering Seniors sat for the exam on April 25. 75% of the Environmental Engineering graduates passed the FE exam

Table 4-4 Continuous Improvement for Criterion 5

Criterion 5. Curriculum			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
Advisory Board recommendation (11/05) to try to create room for thermodynamics and organic chemistry in the original curriculum and in order to deliver engineering statics and dynamics in a more condensed fashion	Teach engineering statics and dynamics within one 4 hr course (became EGM 3420C); add 2 credit course EES 3204C Environmental Chemistry for Engineers	These actions (see WSOE Curriculum Committee minutes of 11/18/05 and 4/18/06) were implemented for the AY2006-07 curriculum.	TBD Students get a shorter version of dynamics than what would be offered in a full 3 credit course (more appropriate for civil engineers) and ENVE students learn environmental organic chemistry and thermodynamics
Advisory Board recommendation (11/05) that the Civil Engineering program needs some reinforced concrete design and/or steel design	Combined hydraulics and hydrology to provide 2 credits used to create the 2-credit course in concrete and steel design	These actions (see WSOE Curriculum Committee minutes of 4/18/06) were implemented for the AY2006-07 curriculum.	Combined Hydraulics and Hydrology course was successful in meeting program outcomes. Students (via SAI) liked the course. Course was a good prerequisite for CWR 4050 Water Resources Design.
Student and faculty input	WSOE Curriculum	This curricular	The revised sequence has

that EGN3833C Engineering Service Learning and EGN3641C Engineering Entrepreneurship might be more effective delivered in the opposite order and at the junior level of the curriculum (input from first offerings of these courses in Spring 2006 and Fall 2007)	Committee discussed this possible improvement on 3/28/07 and then approved the needed curriculum changes on 10/10/07.	change was implemented for students entering on catalog years of AY2006-07 and onwards.	now been offered in AY2008-09 for the first time (because the sequence was elevated to the junior level of the curriculum; seniors in AY2008-09 passed through the old version of the sequence). Assessment results will be available prior to submission of self-study to ABET
Recognition by faculty following Fall 2006 that CAD component in EGN1008C Engineering Concepts and Methods could be deleted (given that Civil Engineering and Environmental Engineering majors see AutoCAD in their Computer Graphics course). Thus EGN1008C could be replaced with a revised 2 credit hr course (instead of 3)	EGN1008C was replaced EGN1041C Problem Solving and Design for Engineers (originally taught as EGN4930); enabling more design to be taught at the freshman level and freeing up 1 credit hr (see use of this credit hour below)	Problem Solving and Design for Engineers was taught as EGN4930 for first time in Spring of 2007; established as EGN1041C in the AY2008-09 curriculum.	EGN1041C is viewed as Not Useful by 75% of surveyed graduating seniors. Students are effectively learning AutoCAD via EGN2111C based upon course assessments; 1 credit hour gained is used in curriculum change outlined below. EGN 1041C needs examples from Environmental Engineering to make it more relevant.
Advisory Board Recommendation (10/06) that CE program was “too environmental” and there should be some choices	Changed 4 credit CWR3202C Hydrology and Hydraulics to 3 credit course CWR3202C Hydraulics (for both CE and EnvE) and 3 credit CWR 4101C Hydrology (only Env. Engineers.) CEs no longer required to take Environmental Chemistry or Solid and Hazardous Waste	These actions were approved by Advisory Board (10/07) and WSOE Curriculum Committee (10/07) and were implemented for the AY2008-09 curriculum.	Actions helped CE with need for 2 course depth in four CE areas. Actions hurt EnvE by creating an additional course to be taught by limited faculty. Action may weaken the delivery of Water Resources Design (required of all CE as well as EnvE
Review of Environmental Curriculum by new Program Director	Proposed Revision to Template	Passed by curriculum committee and in progress	TBD

Table 4-5 Continuous Improvement for Criterion 6

Criterion 6. Faculty			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
Need to hire adequate number of talented faculty in program with range of appropriate competencies from program inception in 2005 to present	Faculty and WSOE leadership searches were authorized and carried out.	AY 2005-06, 2006-07, 2007-08 and 2008-09 searches were approved and were eventually successful. Request for new faculty in Water Resources Engineering has been forwarded to the Administration	One administrator (O'Neill) and seven faculty (Komisar, Badir, Orndoff, Villiers, Bondehagen, Kunberger, and Kim) in place. Faculty skills and education span the breadth of our curriculum.

Table 4-6 Continuous Improvement for Criterion 7

Criterion 7. Facilities			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
Need in AY2007-08 and Fall of 2008 for lecture/lab facility to deliver some engineering mechanics courses prior to Holmes Hall opening	Dr. Blanchard requested that the university provide LIB (library) room 136 as a space to schedule larger section scale-up classes. Dr. Blanchard purchased white boards for the entire room	University approved this request and engineering mechanics courses were delivered in lecture/lab format in AY2007-08 and Fall of 2008 to first two cohorts of students	First two cohorts of Env and Civil Engineering students experienced successful engineering mechanics course delivery (based on Course Reports and assessments) in time period prior to the engineering programs having their own "home"
Need for the engineering programs of the WSOE to have dedicated teaching and research facilities in order to meet full potential	Founding Director and faculty worked since program inception in 2005 along with strong university and community support to design, equip, and occupy Holmes Hall.	Faculty occupied Holmes Hall in 12/08 with first courses delivered for Spring, 2009.	Holmes Hall is a state-of-the-art learner-centered environment. First cohort of program graduates in EnvE Engineering able to utilize facilities in their final semester in curriculum.

Table 4-7 Continuous Improvement for Criterion 8

Criterion 8. Support			
Basis for Action	Action Taken	Action Implemented	Results To Date of Implementation
Need identified prior to occupying Holmes Hall for support to hire a Lab Manager for the building	Dr. Blanchard requested support for this position from the Provost; this support was approved.	Dr. O'Neill led search in Fall 2008 to fill this position (Dr. Komisar was on search panel); Mr. Mark Chew was hired.	Mr. Mark Chew started work at FGCU in this position in 1/09.