General Information Template for Academic Program Review

Degree Area and Level:

Masters of Environmental Engineering (CIP 14.1401) and MS in Environmental Engineering (CIP 14.1401) at NCSU

Addressing UNC Tomorrow:

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Citizens and Their Future: Access to Higher Education (Recommendation 4.2), and Our Environment (Recommendation 4.6).

Role of Program in Relation to State and Regional Needs:

According to NCSU's proposal, "Our previous and current graduates who focus on an environmental engineering concentration within the MSCE degree are high recruited by governmental environmental agencies at the Federal, state and local level (e.g., NC Division of Air Quality, U.S. Environmental Protection Agency), by engineering consulting companies that provide environmental services (e.g., CH2M Hill, Eastern Research Group), industrial companies, (e.g., IBM, ExxonMobile), environmental services companies (e.g., Waste Management), non-profit research institutes (e.g., RTI International, Resources for the Future), non-governmental organizations (e.g., Environmental Defense Fund), and many others. Thus, through the existing environmental engineering concentration within the existing MSCE program we have already demonstrated that course preparation of students focusing in environmental engineering meets the needs of North Carolina, the region, and the nation. Our graduates take to their careers technical expertise as well as the skills to assume leadership roles in industry, academia, and government."

US Labor Department Analysis:

- *Summary* – Environmental engineers should have employment growth of 25 percent during the projections decade, much faster than the average for all occupations. More environmental engineers will be needed to comply with environmental regulations and to develop methods of cleaning up existing hazards. A shift in emphasis toward preventing problems rather than controlling those that already exist, as well as increasing public health concerns resulting from population growth, also are expected to spur demand for environmental engineers. Because of this employment growth, job opportunities should be good even as more students earn degrees. Even though employment of environmental engineers should be less affected by economic conditions than most other types of engineers, a significant economic downturn could reduce the emphasis on environmental protection, reducing job opportunities.
  http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=027A-01&ST=NC&PathNo=1

- *Summary Data* – Source: U.S. Department of Labor and America's Career InfoNet

Occupational Characteristics - North Carolina				
SOC Code	Occupation	Minimum Educ Level	2006-2016 Growth	2008 Wages
17-2081	Environmental Engineers	Bachelor's degree	Faster than average	$66,270
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	Bachelor's degree	Little or no change	$65,150

Occupational Projections - North Carolina							
		Employment			Average Annual Openings		
SOC code	Occupation	Est 2006	Proj 2016	Change	Growth	Replace	Total
17-2081	Environmental Engineers	1,773	2,240	26.3%	47	52	99
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	688	753	9.4%	7	18	24

Wage Trends - North Carolina							
		Median Annual Wage					Change
SOC Code	Occupation	2004	2005	2006	2007	2008	2004 to 2008
17-2081	Environmental Engineers	$61,420	$66,210	$66,760	$66,670	$66,270	7.9%
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	$55,350	$58,560	$59,890	$61,960	$65,150	17.7%

Benchmarks for Wage Trends (all occupations)	2004	2005	2006	2007	2008	Change 2004 to 2008
North Carolina Median Wage	$26,690	$27,160	$27,980	$28,950	$29,860	11.9%
North Carolina Mean Wage	$33,960	$34,460	$35,520	$36,900	$38,230	12.6%
National Median Wage	$28,770	$29,430	$30,400	$31,410	$32,390	12.6%
National Mean Wage	$37,020	$37,870	$39,190	$40,690	$42,270	14.2%

Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):

- *Public universities* – The UNC-CH program title listed below is Environmental Sciences and Engineering but the subject/CIP (03.0104) area is Natural Resources and Conservation not Engineering.

Enrollment			Academic Year						
			Fall 06	Spr 07	Fall 07	Spr 08	Fall 08	Spr 09	Fall 09
UNC-CH	Environmental Sciences and Engineering	MPH	3	3	2	1	1	3	4
		MS	34	25	22	20	25	24	25
		MSEE	9	8	10	13	11	9	16
		MSPH	26	26	23	23	29	26	26

Number of Degrees Awarded			Academic Year		
			2006-2007	2007-2008	2008-2009
UNC-CH	Environmental Sciences and Engineering	MPH	1	2	0
		MS	14	9	8
		MSEE	5	6	6
		MSPH	9	13	10

- *Private universities* – Not available.

Available in Online or Distance Format from UNC institutions:

Not available.

Available or not from Academic Common Market:

Not available.

NCSU Campus enrollment and degrees awarded in similar programs at the Masters level:

(*Based on two CIP digits – 14 CIP is the summary group for Engineering under which Environmental Engineering is a program)*

Enrollment			**Academic Year**						
			Fall 06	Spr 07	Fall 07	Spr 08	Fall 08	Spr 09	Fall 09
NCSU	Engineering, General	M	64	59	74	66	87	87	83
	Aerospace, Aeronautical and Astronautical Engineering	MS	35	35	40	33	47	46	68
	Agricultural/Biological Engineering and Bioengineering	M	0	0	0	0	0	0	8
		MS	26	23	28	30	30	26	29
	Biomedical/Medical Engineering	MS	21	19	23	21	21	18	18
	Chemical Engineering	M	0	0	0	0	0	0	2
		MS	15	16	20	21	25	27	26
	Civil Engineering, General	M	0	0	0	0	0	0	0
		MS	164	150	168	168	184	173	201
	Computer Engineering, General	MS	81	81	104	84	123	93	114
	Electrical, Electronics and Communications Engineering	M	0	0	0	0	0	0	0
		MS	182	152	202	142	215	171	209
	Materials Engineering	M	0	0	0	0	0	0	0
		MS	13	13	14	13	7	4	15
	Mechanical Engineering	M	0	0	0	0	0	0	2
		MS	69	73	111	96	114	97	133
	Nuclear Engineering	M	0	0	0	0	0	0	22
		MS	35	31	33	27	25	28	18
	Textile Sciences and Engineering	M	0	0	0	0	0	0	14
		MS	60	61	74	76	87	68	69
	Industrial Engineering	M	0	0	0	0	0	0	5
		MS	29	26	49	38	69	45	61
	Manufacturing Engineering	M	37	38	43	45	48	61	53
	Operations Research	M	0	0	0	0	0	0	3
		MS	25	25	22	21	17	14	14

Number of Degrees Awarded			Academic Year		
			2006-2007	2007-2008	2008-2009
NCSU	Engineering, General	M	24	14	19
	Aerospace, Aeronautical and Astronautical Engineering	MS	14	8	14
	Agricultural/Biological Engineering and Bioengineering	M	6	5	4
		MS	2	3	12
	Biomedical/Medical Engineering	MS	6	7	1
	Chemical Engineering	M	7	1	0
		MS	16	12	19
	Civil Engineering, General	M	36	49	43
		MS	23	13	6
	Computer Engineering, General	MS	48	80	72
	Electrical, Electronics and Communications Engineering	M	6	38	9
		MS	53	32	57
	Materials Engineering	M	1	4	4
		MS	16	3	5
	Mechanical Engineering	M	1	0	5
		MS	25	33	30
	Nuclear Engineering	M	7	5	2
		MS	2	11	9
	Textile Sciences and Engineering	M	11	8	11
		MS	19	18	27
	Industrial Engineering	M	3	7	15
		MS	18	13	10
	Manufacturing Engineering	M	15	22	15
	Operations Research	M	0	1	8
		MS	13	11	7

Campus Average of enrollment and degrees awarded in this degree area at the Masters level:
(*Based on two CIP digits – 14 CIP is the summary group for Engineering under which Environmental Engineering is a program - over the last 3 Academic Years, Fall 2006-Fall 2009)*

Campus Average			
	Number of Active Programs	Enrollment per Semester	Degrees Awarded per Year
ECU	1	14	N/A – Program established in 2006
NCA&T	6	28	12
NCSU	15	64	26
UNCC	4	48	21
UNC-CH	2	4	3
Campus Average:		32	16

NCSU Campus Degree Programs added in the past three years:

- *Bachelor*
  - BS Agricultural Science (06/08/2007)
  - BA German Studies (06/08/2007)
  - BA Leadership in the Public Sector (08/11/2006)
  - BS Bioprocessing Science (10/13/2006)
  - BA Design Studies (03/16/2007)
- *Master*
  - MS Analytics (02/09/2007)
  - MAT - Master of Arts in Teaching (10/17/2008)
  - MA Anthropology (08/11/2006)
  - MGIM - Master of Global Innovation Management (01/11/2008)
- *Doctoral*
  - PhD Fisheries and Wildlife Sciences (01/12/2007)

NCSU Degree Programs discontinued in past three years:

- *Bachelor*
  - BS Health Occupations Education (03/20/2009)
- *Master*
  - MS Agricultural and Resource Economics (03/20/2009)
  - MEd in Special Education, Behavior Disorders (03/20/2009)
  - MS Behaviorally/Emotionally Handicapped (03/20/2009)
  - MEd Mentally Handicapped (03/20/2009)
  - MS Mentally Handicapped (03/20/2009)
  - MEd Specific Learning Disabilities (03/20/2009)
  - MS Specific Learning Disabilities (03/20/2009)
  - MS School Psychologist (05/11/2007)
- *Doctoral*
  - PhD School Psychologist (05/11/2007)