

Undergraduate
Self-Study Document

Environmental Health Sciences Program
Department of Health Education and Promotion
College of Health and Human Performance
East Carolina University
Greenville, North Carolina

Submitted To:

The National Environmental Health
Science and Protection Accreditation Council

December, 2005

Foreword

This “Self- Study” document of the undergraduate environmental health sciences program (BSEH) at East Carolina University is the culmination of over a year-long process by the our environmental health sciences faculty. Several major changes in the program have occurred since the last review which has been complex and at times painful; however, a new and improved program with a sense of optimism and enthusiasm for academic environmental health has been the result. In 2003, the Environmental Health Program was in danger of being cancelled, and now we have an entirely new and growing faculty, a new and excellent administrative location and more changes occurring such as curriculum modifications and a much needed renovation of our facilities. Take a look at the current status of our program and watch us as we move forward with our new and exciting positive transition!



Sitting: Dr. Alice Anderson, and Mrs. Vickie S. Best
Standing: Dr. Max Zarate, Mr. Paul Andrews, Mr. Ed Crotts,
Mr. William Hill, Dr. Dan Sprau, and Mr. Bill Koch

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A. IDENTIFICATION

1. Program Name

Environmental Health Sciences

2. Name of school/college or department

Department of Health Education & Promotion.

College of Health & Human Performance

3. Name of institution

East Carolina University

4. Name of the program administrator or contact person

Daniel D. Sprau , DrPH, RS, CHI, CSP

5. Mailing address

Belk 310, ECU, Greenville NC 27858-4353

6. Telephone, fax number and E-mail address

Phone: (252) 328-4434

Fax: (252) 328-0380

7. Name of the administrator who is to sign for the university

James Leroy Smith, PhD, Provost/Vice Chancellor of Academic Affairs

8. Name of the chairperson of the department

David M. White, EdD

9. Name of the dean of the college

Glen G. Gilbert, PhD

B. GENERAL INFORMATION

1. Institution's philosophy

The purpose of East Carolina University is to provide an environment and atmosphere conducive to the pursuit, discovery, and dissemination of knowledge and to serve the region, as well as the broader national and international communities, by developing its material and human resources.

Toward this end, East Carolina University is committed:

- To encourage students to develop high standards of personal achievement and an understanding of the nature of academic endeavor and to provide students with a foundation for subsequent study;*
- To prepare students for full and purposeful lives through undergraduate, graduate, and professional instruction;*
- To promote pure and applied research;*
- To provide services to the general community through research efforts, through programs of continuing education, cultural programs, and through service agencies;*
- To develop programs of instruction, research, and service, including terminal graduate and professional programs; and to cooperate with other educational institutions for the advancement of mankind.*

East Carolina University is a public institution committed to rich and distinctive undergraduate and graduate education, exemplary teaching, research and scholarship, public service, and human and intellectual diversity. The University is one of the sixteen constituent institutions of The University of North Carolina. It offers degrees at the baccalaureate, master's specialist, and doctorate levels. Programs of study include the arts and sciences and a wide range of professional fields, including the first professional program in medicine. The University values the contributions of each member of the academic community, encourages the full development of human potential, and is dedicated to scholarly integrity and responsible of the public trust.

The fundamental educational goal of the university is to provide students with a substantive general education and to enable students and other constituents to secure specialized and multidisciplinary knowledge. Through instruction and other educational activities, the university is committed to developing each student's ability to discover, evaluate, and communicate knowledge, to make informed decisions, and to recognize a decision's ethical dimensions. The university is committed to imparting a

sense of responsible citizenship, nourishing an understanding of the interdependencies of human-kind and the environment, enhancing individual potential, and fostering a lifelong commitment to learning, self-discipline, and human well-being. The university strives to serve all who can benefit from these commitments and to address the educational needs of the mid-Atlantic region.

The primary research mission of the university is to advance knowledge, to encourage traditional and nontraditional creative activity, to solve significant human problems, and to provide the best basis possible for professional practice. To these ends, the university supports both pure and applied research. These activities enrich culture, increase knowledge and understanding, and establish the university as a productive social resource.

The service mission of the university is to provide leadership in the pursuit of educational, research, and cultural goals. Medical clinics, libraries, theaters, museums, athletic facilities, and other physical and human resources provide public services that guide and support the cultural, economic, educational, health, human services, and social aspirations of the public.

2. Program objectives

The purpose of the program is to provide undergraduate education and training in environmental health science supported by faculty and student research and other scholarly activities and service. The following are objectives developed to aid the program in addressing its mission.

- a. *Students graduating from the ECU Environmental Health & Safety Program will develop an understanding of human health problems with specific emphasis on environmental causes and effects.*

Classroom instruction in each of the professional courses combined with appropriate field trips and field experiences leads to the attainment of the first objective.

- b. *The ability to recognize, evaluate and apply effective control measures to environmentally-related problems affecting human health.*

Didactic course work, field trips, and field placement provide the experiences necessary for the attainment of the objective.

- c. *Pursue degree requirements, and gain continuing education for those who already possess a degree. Faculty of the Environmental Health Sciences program has offered numerous short courses and seminars for practitioners over the years.*
 - d. *Apply classroom-acquired knowledge and skills in an actual work situation. The primary purpose of EHLT 4990 (Environmental Health Internship) is to attain this objective. Field trips also provide opportunities for students to apply classroom-acquired skills and knowledge.*
 - e. *Gain competencies in the practice of environmental health. This objective can be evaluated by reviewing the pass rate of graduates who sit for registration/certification examinations.*
 - f. *Have academic preparation adequate to meet entrance requirements for admission to graduate programs in environmental/public health or related fields.*
 - g. *Benefit from national accreditation for the undergraduate program.*
3. **Organizational table of the institution -- This table should identify the organization structure of the institution and the position and relationship of the environmental health science and protection program with other baccalaureate programs and the administration. (See Appendix A)**
4. **Brief program history**

The year 2006 will mark the thirty-fifth anniversary of the formal establishment of the environmental health program at East Carolina University. In 1971, the N.C. Board of Higher Education, as one of its final acts for the year, approved the undergraduate program. Thereafter all authority for program approval was transferred to the Board of Governors of the UNC System. It is interesting to note that the Board of Governors in early 1972 declared a moratorium on the establishment of new programs - an action which would likely have delayed the development of the program at ECU for a number of years!

The first faculty members affiliated with the program were Mr. Russell Miller, who served as Acting Chair of the Department, and Mr. Richard Padgett. Their primary responsibilities were to write course proposals and obtain University approval of the program during the latter part of 1971 and early 1972. The first students were admitted to the program during the 1972 Winter Quarter.

Dr. Trenton Davis joined the faculty on May 1, 1972 as the first Chair, a position he held until 1984. Miller and Padgett accepted other positions outside of the state and were replaced by Dr. Y. J. Lao in 1973 and Dr. Barney Kane in 1974.

Ms. Debbie Hawkins completed requirements for the B.S. degree in March of 1974 to become the first of well over 500 students to graduate with undergraduate degrees in environmental health sciences.

Dr. Oris Blackwell joined the faculty in 1974 and served as professor until 1982 when he was replaced by Dr. Denis Bourcier. Dr. Bourcier was replaced by Dr. Jim Robertson in 1985. Another faculty member, Dr. Gary Smith, was affiliated with the department from 1987 to 1988.

Dr. Lao served as Acting Chair from 1984 - 1986 when Dr. Davis accepted a position in the Division of Academic Affairs. He was appointed Chair in 1986, a position he held until 1996 when Dr. Kevin O'Brien was named Acting Chair. Dr. Davis returned to the department in July, 1990 after serving as Associate Vice Chancellor for Academic Support and Interim Dean of the School of Industry and Technology.

In the summer of 1999 the Department was officially transferred administratively from the School of Allied Health Sciences to the School of Industry and Technology. The name of the department was changed from Environmental Health to Environmental Health Sciences, Safety, and Technology. The reason for the change was that the department expanded its curriculum by absorbing the safety component including Dr. Mark Friend and Dr. James Kohn, previously located in the Department of Industrial Technology. Dr. James Robertson retired from the department in August 1999 after 14 years of service. A successful search for the vacated position was completed in February, 2000. Dr. Burton Ogle accepted the position as an assistant professor and assumed the full time position in Fall, 2000. Also, Dr. Dan Sprau joined the faculty in August, 1999; the position was vacated by the death of Dr. James Kohn. Dr. Y.J. Lao was again appointed as the chair of the department in the summer of 1999.

Dr. Y.J. Lao retired in July of 2000 and Dr. Barney Kane began a three year part-time phased retirement schedule. Dr. Daniel Sprau was appointed interim Chair and the search for a new chair began.

The search for a new Chair was unsuccessful and Dr. Doug Kruger, Chair of Construction Management was appointed Interim Chair of the Department in the Fall Semester of 2001 while another search for a new Chair began.

During the Spring Semester of 2002, the entire departmental faculty was informed individually that the Environmental Health Sciences program and department would be phased out due to low enrollment. This began a major campaign involving the faculty students, alumni, NEHA, NC Health Departments, and AEHAP to save the program. Through the major efforts of Dr. Trenton Davis, the program was retained and moved as the Environmental Health Sciences Program under the Department of Health Education and Promotion in what is now called the College of Health and Human Performance. Dr. David White is Chair of the Department and Dr. Sprau served as Program Director.

Mr. Ed Crotts, MSEH, CIH joined the program as visiting professor in the Fall semester of 2002. Dr. Trenton Davis retired from ECU after 32 years of exemplary service in the Spring Semester of 2003.

Dr. Alice Anderson and Dr. Max Zarate joined the program as Assistant Professors in the Fall Semesters of 2003 and 2004 respectively. Mr. William Hill, RS joined the program full-time in the Fall Semester of 2005. Mr. Paul Andrews and Mr. William Koch have been working with the program as part-time instructors since the Fall Semester of 2003.

In 2006-2007, the Environmental Health Sciences program will be physically relocated for at least a year while complete renovations to the Belk Building are completed.

C. CURRICULUM (SEE APPENDIX B)

1. Admission requirements to the environmental health science and protection program

a. When are students admitted (e.g., freshman or junior)?

Students may be admitted during their freshman year; however, most are admitted during the junior year upon completion of general education requirements.

b. Grade or test score requirements

Since the spring of 2002, all interested students are admitted to the program. The program does not admit students with a GPA of 2.0 or below.

c. Other admission requirements

Applicants must have completed at least one environmental health course prior to applying for admission to the program. Students must meet the entrance criteria of East Carolina University.

2. Course requirements

a. Prerequisite courses to be completed prior to admission or matriculation in technical/professional courses

The department offers two options for environmental health students: Public Health Option and Industrial Hygiene option. Students may select one or both options. General education and required cognates are listed below. The general education requirements include at least 6 credits of English, 8 credits of science, 12 credits of Social Science, 10 credits of Humanities and Fine Arts, 3 credits of mathematics and 3 credits of health, exercise and sports science. In addition, students must fulfill the writing across the curriculum requirement. To do so, each student must complete a minimum of 12 credits of writing intensive courses, including ENGL 1100, 1200; 3 credits writing intensive courses in the major, EHLT 4200; and 3 credits of Technical Writing, ITEC 3290.

Public Health Option

General Education (42 semester hours)

<i>CHEM 1150, 1151</i>	<i>General Chemistry & Lab I (3, 1)</i>
<i>CHEM 1160, 1161</i>	<i>General Chemistry & Lab (3, 1)</i>
<i>GEOG 3220</i>	<i>Soil Properties, Surveys, and Applications (3)</i>

MATH 1065	College Algebra (3)
PSYC 1000	Introductory Psychology (3)
SOCI 2110	Introduction to Sociology (3)
SPCH 2520	Business & Professional Communication (3)
ENGL 1100, 1200	Composition (3, 3)
Social Sciences	(3)
Humanities & Fine Arts	(7)
Health, Exercise, & Sports Science	(3)

Required Cognate (33 semester hours)

BIOL 1050, 1051	General Biology & Lab (3, 1)
BIOL 2110, 2111	Fundamentals of Microbiology & Lab (4, 1)
BIOL 2130	Survey of Human Physiology & Anatomy (4)
CHEM 2650, 2651	Organic Chemistry for Life Sciences (4, 1)
DSCI 2223	Introduction to Computers (3)
ITEC 3290	Technical Writing (3)
MATH 2119	Elements of Calculus (3)
MATH 3228	Elementary Statistical Methods (3)
PHYS 1250, 1251	General Physics & Lab (3, 1)

Industrial Hygiene Option

General Education (42 semester hours)

CHEM 1150, 1151	General Chemistry & Lab I (3, 1)
CHEM 1160, 1161	General Chemistry & Lab (3, 1)
GEOG 3220	Soil Properties, Surveys, and Applications (3)
MATH 1065	College Algebra (3)
PSYC 1000	Introductory Psychology (3)
SOCI 2110	Introduction to Sociology (3)
SPCH 2520	Business & Professional Communication (3)
ENGL 1100, 1200	Composition (3, 3)
Social Sciences	(3)
Humanities & Fine Arts	(7)
Health, Exercise, & Sports Science	(3)

Required Cognate (40 semester hours)

BIOL 1050, 1051	General Biology & Lab (3, 1)
BIOL 2110, 2111	Fundamentals of Microbiology & Lab (4, 1)

BIOL 2130	Survey of Human Physiology & Anatomy (4)
CHEM 2650, 2651	Organic Chemistry for Life Sciences (4, 1)
DSCI 2223	Introduction to Computers (3)
ITEC 3290	Technical Writing (3)
MATH 2121, 2122	Calculus for Life Sciences I, II (3, 3)
MATH 3228	Elementary Statistical Methods (3)
PHYS 1250, 1251	General Physics & Lab (3, 1)

b. Professional/technical courses required--taught outside this program

No professional courses required for the B.S. degree are taught outside the program. Cognate courses listed above are taught outside the program.

c. Professional/technical courses required--taught within this program

All the professional courses (EHST courses) are taught by the program's departmental faculty. The required professional courses for each option are listed below.

Public Health Option (47 semester hours)

EHST 2110: Introduction to Environmental Health Science (3)

EHST2500: Introduction to Radiological Health (3)

EHST 3003: Environmental Epidemiology (3)

EHST 3100: Injury Control (2)

EHST 3200: Food Sanitation Principles (3)

EHST 3201: Food Sanitation Principles Lab (1)

EHST 3350: Water Supply & Wastewater Treatment (3)

EHST 3351: Water Supply & Wastewater Treatment Lab (1)

EHST 3370: On-Site Wastewater Treatment & Disposal (3)

EHST 3371: On-Site Wastewater Treatment & Disposal Lab (1)

EHST 3600: Air Pollution (3)

EHST 3700: Industrial Hygiene (3)

EHST 3701: Industrial Hygiene (3)

EHST 4010: Toxicological Foundations of Risk Assessment (3)

EHST 4200: Environmental Health Management & Law (3)

EHST 4300: Institutional, Recreational Sanitation, & Vector Borne Diseases (3)

EHST 4301: Institutional, Recreational Sanitation, & Vector Borne Diseases Lab (1)

EHST 4990: Environmental Health Internship (3)
EHST 5800: Solid & Hazardous Waste Management (3)

Industrial Hygiene Option (38 semester hours)

EHST 2110: Introduction to Environmental Health Science (3)
EHST2500: Introduction to Radiological Health (3)
EHST 3003: Environmental Epidemiology (3)
EHST 3100: Injury Control (2)
EHST 3350: Water Supply & Wastewater Treatment (3)
EHST 3351: Water Supply & Wastewater Treatment Lab (1)
EHST 3600: Air Pollution (3)
EHST 3700: Industrial Hygiene (3)
EHST 3701: Industrial Hygiene (3)
EHST 3900: Introduction to Occupational Health (3)
EHST 4010: Toxicological Foundations of Risk Assessment (3)
EHST 4200: Environmental Health Management & Law (3)
EHST 4990: Environmental Health Internship (3)
EHST 5800: Solid & Hazardous Waste Management (3)

- d. Professional/technical selective or elective courses recommended. Provide a list containing the course identification number, course title, and the instructor's name for each course included under C. 2. b, c, and**

The following courses are recommended as electives:

EHST 3000: Environmental Health Practice Seminar (1)
EHST 3500, 3501, 3502: Problems in Environmental Health (1, 2,3)
EHST 4991: Environmental Health Internship (3)
EHST 5010: Principles of Toxicology (3)
EHST 5020: Environmental Toxicology (3)

- e. For each course provide more detailed information in the appendix which includes: course objectives, course outline for class schedule of lectures or laboratories, assignments, text or major references, and credit hours. (See Appendix B)**

National Environmental Health Science and Protection Accreditation Council (Course Requirement Form)

How to complete this table:

- EHAC Academic guidelines according to Table 2 (Criteria for Accreditation of Environmental Health Science and Protection Baccalaureate Curricula) in the Curriculum Criteria section of the Undergraduate Guidelines are given in the left column.
- In the second column, please provide the designation (department/number) of the course(s) that satisfy each requirement. Multiple courses may be listed if more than one course is used to fulfill that guideline. Please add additional rows to the table as needed.
- Please provide the name of the course in the third column
- Please provide the credit hours for the course **AND** designate if these are **semester or quarter** credit hours.
- Please provide the percent of the time in the course that is spent fulfilling the EHAC guideline.
- Please provide the name(s) of the Principal Instructors for each listed course.
- Please insert additional rows as necessary.

Table1. Course Requirements for Environmental Health Program Majors and Their Relationship to EHAC Academic Guidelines.

EHAC Academic Guidelines	Course Designation	Course Name	Credit Hour	% course time corresponding to EHAC guideline	Principal Instructor(s)
<i>Foundation Areas: Methodology Core (separate courses required)</i>					
Epidemiology	EHST 3003	Environmental Epidemiology	3	90	Anderson
Statistical Methods	BIOS 1500	Intro to Biostatistics	3	100	
Toxicology	EHST 4010	Toxicological Foundations of Risk Assess	3	60	Crotts
<i>Foundation Areas: Related Areas (basic understanding required)</i>					
Environmental Economics					
Environmental Health Management	EHST 4200	Environmental Hlth Mgmt & Law	3	70	Anderson

Environmental Law & Public Policy	EHST 4200	Environmental Hlth Mgmt & Law	3	20	Anderson
Risk Assessment	EHST 4010	Toxicological Foundations of Risk Assessment	3	20	Crotts
Risk Communication	EHST 1040	Toxicological Foundations of Risk Assessment	3	20	Crotts
<i>Environmental Health Programmatic Areas: (in-depth study in four areas/exposure to majority)</i>					
Air Quality	EHST 3600	Air Pollution	3	90	Koch, Crotts, Sprau
Environmental Chemistry	EHST 3350	Water Supply: Wastewater Treatment	3,1	5,5	Zarate
Environmental Epidemiology	EHST 3003	Epidemiology	3	10	Anderson
EH Planning	EHST 4200	EH Management & Law	3	10	Anderson
Environmental Microbiology	EHST 3350,1 EHST 3370,1 EHST 3700,1	Water Supply & Wastewater Treatment	3,1	15	Zarate
		Onsite Wastewater	3,1	20	Zarate
		Industrial Hygiene	3,1	5	Crotts
Food Protection	EHST 3200, 1	Food Sanitation Principles, Lab	3,1	100	Hill
Global Environmental Health	EHST 2110 EHST 2600	Intro to Environmental Health	3	30	Hill, Zarate
		Air Pollution	3	10	Crotts, Sprau
Housing	EHST 4300	Institutional & Recreational Sani	3	10	Hill, Anderson
Hazardous Materials	EHST 3100	Injury Control	2	10	Crotts
Hydrogeology	EHST 3370,1	Onsite Wastewater	3	20	Zarate
Industrial Hygiene	EHST 3700,1	Industrial Hygiene, Lab	3,1	85	Crotts, Sprau
Injury Prevention	EHST 3100	Injury Control	2	60	Crotts
Institutional Health	EHST 4300	Institutional & Recreational Sani	3	50	Hill, Anderson
Noise Control	EHST 3700,1	Industrial Hygiene, Lab	3,1	100	Crotts, Sprau
Occupational Health & Safety	EHST 3700,1 EHST 3100	Industrial Hygiene, Lab	3,1	10	Crotts, Sprau
		Injury Control	2	30	Crotts
Radiation Health	EHST 2500	Intro to Radiological Health	3	100	Sprau
Recreational EH	EHST 4300	Institutional & Recreational Sani	3	15	Hill, Anderson

Soils	GEOG 3220				
Solid Waste Management	EHST 5800	Solid & Hazardous Waste	3	100	Koch, Crotts, Sprau, Hill, Anderson, Hill
Vector Control	EHST 4300,1	Institutional, Recreational, Sanitation & Vector Borne Diseases, Lab	3,1	25	Anderson, Hill
Wastewater	EHST 3350,1 EHST 3370,1	Water Supply & Waste Water Treatment, Lab; Onsite Waste Water Treatment & Disp	4,1 4,1	30 60	Zarate
Water Quality	EHST 3350,1	Water Supply & Waste Water Treatment, Lab	4,1	30	Zarate
Water Supply	EHST 3350,1	Water Supply & Waste Water Treatment, Lab	4,1	20	Zarate
<i>Field Experience and Problem-based Learning: (180-clock hours total)</i>					
Field Experience	EHST 4990,1	Environmental Health Internship	3,3	100	Crotts,Anderson,Hill,Andrews
<i>Background Areas: Basic Sciences (same as offered to basic science majors; one-year biology including microbiology; one-year chemistry (general and organic) including laboratories; one-half year physics; one and one-half years of basic science electives)</i>					
Biological Sciences	BIOL 1050,1	1-2130-2110,1			
Chemistry (w/labs)	CHEM 1150,1	1151-1160,1160-2650,2651			
Physics	PHYS 1250	1250-1260,1261			
Electives					
<i>Background Areas: Communication (proficiency in oral and written communication)</i>					
Oral communication	COMM 2420				
Written communication	ITEC 3290(WI)	ENGL 1100(WI), ENGL 1200(WI), EHST 4200 (WI)			
<i>Background Areas: Computer Skills (proficiency in email, internet, word processing, data management programs)</i>					
E-mail/Internet	DSC I2223				
Word Processing	DSC I2223				
Data Management	DSC I2223				
<i>Background Areas: General Education (University's general requirement must be satisfied in humanities and social sciences)</i>					

Humanities					
Social Sciences	PSYC 1000 SOCI 2110				
<i>Background Areas: Electives (as necessary)</i>					

3. Course Evaluations, Curriculum Evaluation

a. Describe how students and faculty evaluate required professional courses in this profession

For each course taught during the fall and spring semesters, students complete a survey form which addresses the following items: Helpful, Criteria, Objectives Clear, Preparation, Enthusiasm, Evaluation Methods, Textbooks, Challenging, Syllabus, Questions, Understanding, Availability, Feedback, Respect, Points of View, Tested Materials, Course Content, Amount of Work, and Overall Effectiveness. The results of these surveys are used by instructors and the department chair to evaluate the professional courses. The results are also used in the annual evaluation of faculty performance.

An alumni survey was conducted at the end of 2005 to assess the relevance of professional courses offered by the program. The results will be reviewed by faculty for possible course modifications. In addition, each faculty member routinely reviews course syllabi to determine whether courses are relevant to the field and address current practices and technologies. The ten essential environmental health sciences and core competencies are included in this evaluation.

b. When and how is the curriculum reviewed or evaluated by the faculty? (SEE APPENDIX E)

The faculty conducts an informal review of the curriculum during the spring semester as teaching assignments are made.

The faculty review and evaluate the curriculum as laws and regulations change in the state.

4. What are the plans or considerations to add courses or to make significant changes in the content of existing courses? (See Draft Proposed Curriculum Changes in Appendix B)

Proposed curriculum changes for the BSEH include the elimination of the current two options: Public Health and Industrial Hygiene. This will create a single generalist environmental health degree. This overall curriculum change is being proposed in order to make our graduates more marketable in the general field of environmental health, bring the degree requirements back in line with other accredited programs, and also to respond to the recommendation of Trenton Davis, DrPH, Professor

Emeritus. Total semester hours required for the degree remains the same at 126 s.h. A full listing of the course requirements is included as Appendix C.

A copy of the latest bulletin or catalog describing the curriculum and course descriptions plus general university information should be included with the Program Evaluation Report. (See website below)

<http://www.ecu.edu/cs-hhp/hlth/EHST/Environmental-Health-Sciences-Accreditation.cfm>

D. STUDENT DATA (UNDERGRADUATE CURRICULUM)

1. Current Enrollment

<i>Freshman</i>	<u>0</u>
<i>Sophomore</i>	<u>1</u>
<i>Junior</i>	<u>5</u>
<i>Senior</i>	<u>22</u>
<i>Students with a prior baccalaureate degree</i>	<u>0</u>
<i>Total Enrollment</i>	<u>28</u>

2. Number of graduates during the past five years

a. <i>September 1997 to August 1998:</i>	<u>25</u>
b. <i>September 1999 to August 2000:</i>	<u>17</u>
c. <i>September 2000 to August 2001:</i>	<u>13</u>
d. <i>September 2002 to August 2003:</i>	<u>12</u>
e. <i>September 2005 to August 2005:</i>	<u>12</u>

3. List all graduates for the last two school years and identify their current activity (employment) or status and location.
 - a. September 2003 to August 2004:
 - Trevor Dean Vanderplaats*
 - Kathryn Elizabeth Stepp Flores*
 - Jennifer Ashley Kincaid, Environmental Health Spc., Kinston*
North Carolina
 - Lucas Anthony Norris*
 - Jessica Lynn Stallings*
 - Karie Lynn Durst- Mother*
 - Bryan Matthew Hancock-Environmental Health Spc, Rocky Mount,*
North Carolina
 - James Larry Hicks, Jr.*
 - Andrew John Krelie*
 - Travis Lewis Thompson*
 - Charles Thomas Valentine*

 - b. September 2004 to August 2005:
 - Geoffrey Nelson Warlick*
 - Kenneth Atwan Dingle*
 - Keith Fitzgerald Eason*
 - Eric Randall Griffin*
 - Brian Joseph Loconto*
 - Lakisha Manyell Sutton- Environmental Health Spc*
 - Maiisha LaShawn Moore (Deceased)*
 - Tamika Michell Langley-Married*
 - Christopher Lee Henry- Graduate School*
 - Thomas Shannon Jennings, II*
 - Brian Joseph Maitland*
 - Jacob Ian Hopper-United States Coast Guard*
 - Justin Roy Hayes*

4. **Describe enrollment changes and trends and how the trend may affect the program. What are the projected enrollment figures over the next five years? Projected faculty FTE?**

General enrollment trend is steady since the scheduled termination of the environmental health program in spring 2002 was successfully overcome.

Currently, there are 5 fulltime faculty with the Environmental Health Program, with the search for a sixth fulltime faculty member to begin in early 2006. Two part-time faculty are also available.

5. **What is the program capacity at the current level of faculty, funding, and facilities?**

100 Students

6. **Is there a graduate level program in environmental health science and protection? Degree offered? What is the total enrollment of the graduate program?**

MSEH - 10

7. **How or in what ways are the graduate and undergraduate programs integrated (e.g., students in same classes, faculty involvement with the two programs)?**

Same 5000 Level Course offered to undergraduate and graduate. Faculty teach both undergraduate and graduate courses. Graduate courses are taught by tenure-track and PhD faculty, in most cases.

E. FACULTY

- 1. List all faculty who are direct participants in the professional program and include their faculty rank, degrees, role or assigned responsibility, and if they are full-time or part-time. Include in the appendix a curriculum vitae for each of the faculty listed.**

*Alice Anderson, PhD, Assistant Professor, Fulltime
Mr. Paul Andrews, MSEH, RS, Visiting Instructor, Part-time
Mr. Ed Crofts, MSEH, CIH, Visiting Instructor, Fulltime
Mr. William Hill, MS, RS, Visiting Instructor, Fulltime
Mr. William Koch, MS, Visiting Instructor, Part-time
Daniel Sprau, DrPH, RS, CIH, CSP, Associate Professor, Fulltime
Dr. Max Zarate, PhD, Assistant Professor, Fulltime*

- 2. What are the program or university guidelines for teaching and advising loads for the faculty?**

A fulltime faculty member is defined by the UNC General Administration as one who teaches 12 semester hours or equivalent during each of the Fall and Spring semesters. Departmental faculty teach an average of less than 9 semester hours each semester.

Responsibility for student advising is distributed among the five full-time faculty members, with Mr. Crofts and Mr. Hill providing the most advising.

- 3. How is faculty performance evaluated?**

Each faculty member, in consultation with the department chair, develops annual performance plans which outlines specific goals against which performance is evaluated. Goals are developed in the areas of teaching, research, and public service.

Results of student opinion surveys of teaching effectiveness and student opinion surveys of advising effectiveness are used by the chair to evaluate faculty performance.

- 4. What professional activities are faculty expected to carry on outside the institution?**

Faculty is expected to participate in professional/scientific organizations and to provide public service to professional and community groups in ways relating to their areas of expertise.

- 5. What faculty development activities are available to the faculty (e.g., leave arrangements, travel money for professional meetings, release time for study)?**

There is no provision for sabbaticals in the UNC system; however, faculty may negotiate leaves of absences with their department heads.

Travel funds are available to support travel for faculty to attend at least one national professional meeting each year.

Faculty members may enroll in one course offered by the university each semester at no cost.

F. FACILITIES AND RESOURCES

1. Summarize available library facilities directly relevant to the faculty and students.

Students majoring in environmental health have access to holdings of two libraries on campus; Joyner Library, located on main campus and the Health Sciences Library, located at the medical school. Joyner Library contains approximately 1.3 million volumes, more than 2 million pieces of microform, and about 12,000 serial titles. As a selective depository for U.S. Government publications, Joyner Library's Document department contains over 1 million international, federal, and state documents and 101, 586 maps. Joyner Library's holdings in education, naval and maritime history, and law reference materials are particularly strong. Access to information resources is provided by CD-ROM and online services located in the reference department.

The William E. Laupus Health Sciences Library is located in the Brody Medical Sciences Complex. It serves as the primary information resource facility for the university's health science programs. The Health Sciences Library contains approximately 145, 814 bound or hard copy volumes, the equivalent of an additional 177, 015 volumes in micro format, and receives 1,545 periodical and serial subscriptions.

The library is equipped with more than 100 computers available for public use and supports a growing program of electronic information and services. Reference services, bibliographic instruction, class reserves, historical collections, and a state of the art computer lab are also available.

Both Joyner Library and the Laupus Health Sciences Library resources are available through the VirtualLibrary@ECU.

2. Describe computer and internet resources available to the faculty and students.

Information Technology and Computing Services (ITCS) provides computing, network, and outreach support for academic education, research, and administrative programs on campus. Recognized throughout the region as a leader in incorporating technological advances in all phases of operation, East Carolina University is one of five universities holding membership in Internet2 in North Carolina. Partnering with campus departments, other universities, and industry ITCS makes strategic investments in the information technology infrastructure.

The core server facility provides a platform for faculty to develop Internet-enhanced and online course material. This allows the course content to be available to students anywhere in the world. The facility also houses a Digital Resources Collection, a Windows Media Server, and personal web space for faculty instructional material. Housed on remote corporate servers, Blackboard enhances course management system technical support.

Located throughout campus are more than sixty student computer laboratories that support both discipline-specific applications as well as general computing. All are networked and both the Apple and PC platforms are supported throughout the university. Students have access to the internet through a Cyber Café and through wireless connectivity on campus.

ITCS also supports an immersive visualization facility for teaching and learning; a SGI Origin 2000 parallel processing computer for ECU faculty, staff, and graduate students that are pursuing research objectives; and IP/TV video streaming system that enables the ECU-networked community to access instructive, and professional development opportunities, as well as real-time cable broadcasts and satellite programs over the Internet; an advanced videoconferencing Access Grid system that facilitates large-scale distributed meetings; collaborative seminars, lectures, work sessions, tutorials, and training; high-speed internet connection to the Internet. ECU's Onestop enables students to access their grades, register for their classes, and take care of many everyday administrative functions on-line.

3. What laboratory facilities and equipment are available for teaching the professional/technical courses?

Two teaching/research laboratories, located in the Belk building are assigned to the program. A 710 square foot teaching laboratory located on the second floor has 24 seats and an adjacent preparation room. It is used for essentially all the laboratory exercises in food sanitation, water supply and wastewater, onsite waste, and identification of vectors. It is also used for a portion of industrial hygiene laboratory. Another 910 square foot laboratory is located on the third floor across from the program's administrative office. It is mainly used for research and industrial hygiene activities involving computer operated instruments such as gas chromatograph and atomic absorption spectrophotometer.

4. What instructional facilities and learning-aid resources are available to the faculty?

Faculty have access to Joyner Library's Media and Teaching Resources Center. In addition, faculty have access to significant learning-aid resources in the William E. Laupus Health Sciences Library. The Center for Health Sciences Communications assists faculty in the preparation of slides and videos for use in both on-campus and online presentations.

5. What changes are anticipated regarding facilities and equipment availability to faculty and students?

Laboratory and office space in the Belk building will be completely renovated in 2006; more than tripling available space. (See Appendix D)

6. What external facilities/agencies/organizations are available and used for field experiences--field trips, internships? List external training used by students in this program.

The Pitt County Health Department and other local health departments provided opportunities for field trips relating to institutional sanitation, food sanitation, and on-site wastewater systems. Other sites including the Pitt County Corrections facility, tattoo establishments, recycling centers, animal shelters, and Goose Creek Park are visited.

The following is a list of sites which have been used for undergraduate internships:

*ASMO, Greenville, North Carolina
Craven County Health Department, New Bern, North Carolina
Dare County Mosquito Control Section
Pitt County Health Department, Greenville, North Carolina
Pitt County Memorial Hospital, Greenville, North Carolina
Pasquotank-Perquimans-Chowan-Camden Health District, Elizabeth City,
North Carolina
Cherry Point Marine Corps Air Station, Havelock, North Carolina
North Carolina State University Research Station, Goldsboro, North
Carolina
Radiation/Biosafety Office, ECU School of Medicine
ECU Office of Environmental Health & Safety
Chowan-Gates-Perquimmons Solid Waste District
Weyerhaeuser Company, New Bern, North Carolina
PCS Phosphate, Aurora, North Carolina
PHS, Indian Health Service, COSTEP
Maxton Meat Processors Inc., Triangle Park, North Carolina
DSM Pharmaceuticals, Greenville, North Carolina*

GlaxoSmithKline, Research Triangle Park, North Carolina
Merck Pharmaceutical, Wilson, North Carolina
Oakland County Health Department, Pontiac, Michigan
Mecklenburg County Health Department, Charlotte, North Carolina
Volusia County Health Department, Daytona Beach, Florida
Lenoir County Health Department, Kinston, North Carolina
*NC Department of Environmental and Natural Resources, Public Health
Pest Management*
New River Council of Governments, New Bern, North Carolina
*ABB Power Technology & Development Company, Pinetops, North
Carolina*
Conservation and Research Center, Front Royal, Virginia
Greenville Utilities Commission, Greenville, North Carolina
NC Coastal Federation, Newport, North Carolina
Radian Corporation, Morrisville, North Carolina
U.S.E.P.A., Research Triangle Park, North Carolina
Union Camp Corporation, Franklin, Virginia
Weyerhaeuser Company, Moncure, North Carolina
Seymour Johnson Air Force Base, North Carolina
Standard Products, Rocky Mount, North Carolina
University of Texas, Houston Health Sciences Center
Carolina Turkeys, Mount Olive, North Carolina

7. Is there an advisory committee for this program? If so, identify the members of the committee, the service provided by the committee, its meeting schedule, etc.

Currently there is no advisory committee. However, the program's faculty contacts graduates and employers to assess the program's effectiveness in preparing practitioners. Results of these interim surveys are used by the department to evaluate course offerings and other matters related to the curriculum. There are plans for an advisory committee to begin by fall 2006.

In addition, faculty routinely receive input from the field through their services on numerous professional committees. Some of the more significant committees are: NC Centralized Intern Training Committee, NC Radiation Protection Commission.

G. PROGRAM FUNDING

- 1. Describe the major sources of funding for this program and their relative stability.**

The major source of funding is state appropriations. The budget has been very stable in the past few years. The department did receive additional equipment funds, so a few major instruments were purchased during the past two years, including ten new microscopes and light sources..

The department anticipates continued budget support in the future. Increases in funding are needed for additional faculty members, and the continued replacement of older equipment.

- 2. Describe research or special project grants which enrich the program through faculty support, opportunities for student employment, or similar enhancements.**

The program partners with the Pitt County Memorial Hospital (Greenville, NC) for ongoing support for paid student internships. There is now a program supported by Greenville Utilities to fund two graduate and two undergraduate internships. There is ongoing research in vector-borne disease and water supply and wastewater treatment, though not yet funded by research. We have had the opportunity to send one faculty to the CDC Leadership Institute, funded by a grant from the CDC. This institute brings our faculty into line with important project management & leadership techniques stressed by the CDC, and also brings ECU into the U.S.-wide drive to improve the public health and environmental health workforce through understanding and application of the ten essential environmental health sciences.

H. FACULTY/ADMINISTRATION EVALUATION

1. What are the major strengths of this program?

- a. *The faculty is well qualified by education and experiences, with expertise in Industrial Hygiene, Radiological Health, and Vectors and Local Environmental Health Programs.*
- b. *The program is again starting to attract well-qualified students.*
- c. *The faculty is committed to provide quality educational experiences for all students. The program continues to be very diverse.*
- d. *Program graduates are adequately prepared for entry-level environmental health positions.*
- e. *The faculty is involved in significant professional service activities, and is beginning to institute major research initiatives .*

2. Describe problem areas which are of current concern.

- a. *The need to continue to develop qualified faculty in all areas, including leadership.*
- b. *Visibility, and stability for the program.*
- c. *The average faculty teaching load makes it difficult for faculty to develop and sustain a research program.*

3. Summarize the long-term plans for this program.

- a. *Faculty will continue to evaluate the curriculum through input from students, practitioners, employers of graduates, and program graduates in order to assure that the program is producing qualified graduates.*
- b. *To continue to develop opportunities for faculty to become more active in research through successful grant applications..*
- c. *To develop additional local environmental health contacts, and complete a generalist curriculum revision. Developing some courses for online delivery is underway and will continue to be an important goal.*

- d. *Continue to explore opportunities for collaboration with other undergraduate programs at ECU and with North Carolina Central University and Western Carolina University in online delivery, video conferencing and other new technological means as they develop.*

I. OFFICIAL SIGNATURES

Signatures of the environmental health science and protection faculty member directing the program and an authorized official of the institution are required (e.g., dean of the school, vice president, or president).

*Daniel D. Sprau, DrPH, RS, CIH, CST
Director, Environmental Health Sciences Program*

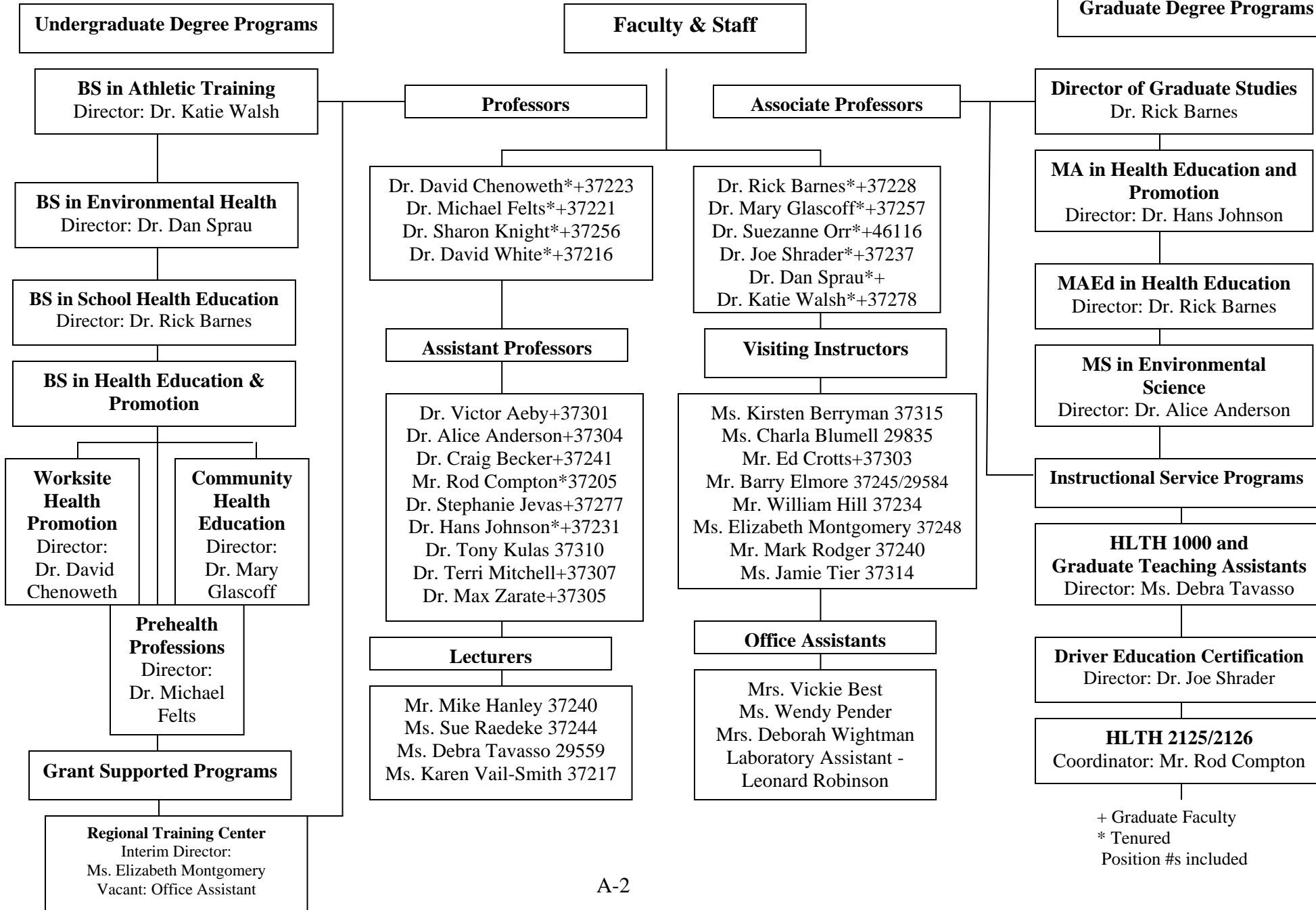
*David White, EdD,
Chair, Health Education & Promotion*

*Glen G. Gilbert, PhD,
Dean, College of Health & Human Performance*

*James Leroy Smith, PhD,
Provost & Vice Chancellor of Academic Affairs*

APPENDIX A
(Organizational Structure)

Department of Health Education & Promotion Organizational Chart
Department Chair: Dr. David White



+ Graduate Faculty
 * Tenured
 Position #s included

APPENDIX B
(Course Syllabi, Draft Proposed Curriculum Changes)

DEPARTMENT OF HEALTH EDUCATION AND PROMOTION
ENVIRONMENTAL HEALTH SCIENCES AND SAFETY PROGRAM

EHST 2110 Introduction to Environmental Health

Fall, 2005 (MWF) Bate Building Room 1012

8:00-8:50

Instructor: W. E. Hill, Jr., RS, MSA, Visiting Instructor
Office Hours: MWF (1:00-2:00) TTH (9:00-11:00/1:00-2:00)
Times by Appointments also available
Contact Info: Office: 315 Belk
Office Telephone: 328-1690
Email: hillw@mail.ecu.edu

Text: Our Global Environment: A Health Perspective, (5th Edition),
Anne Nadakavakaren, Waveland Press, 2000

Catalogue Description:

Introductory course designed to acquaint the student with the principles of environmental health practice. Areas of major emphasis are water quality, air quality, food supply, industrial hygiene, and solid and hazardous waste disposal.

Readings from Text:

Chapter 1 Introduction of Ecological Principles
Chapter 2 Population Dynamics
Chapter 3 Population Control
Chapter 7 Toxic Substances
Chapter 11 The Atmosphere
Chapter 12 Air Pollution
Chapter 14 Water Resources
Chapter 15 Water Pollution
Chapter 9 Food Quality
Chapter 8 Pest and Pesticides
Chapter 10 Radiation
Chapter 16 Solid and Hazardous Wastes
Chapter 6 Environmental Disease

Grading Scale:

A= 90-100% Excellent
B= 80-90% Above Average
C= 70-80% Average

D= 60-70% Below Average
F= 60% Below Passing Standard

Grade Factors:

<u>Work Required</u>	<u>% of Final</u>
<u>Grade</u>	
Avg. of Worksheet Grades/Quizzes	15
First Exam	20
Second Exam	20
Project Presentation	5
Project Paper	10
Final Exam	20
Class Participation	10

Posting Grades:

Final grades are posted and accessible with 24 hours of receipt in the Registrar's office via the World Wide Web and the automated voice response system. Students may check their grades using their PIN through either of these options.

Attendance Policy:

University Policy states "Students are expected to attend punctually all lectures and laboratory sessions in the course for which they are registered, beginning with the first session following registration..."

ATTENDANCE COUNTS! POINTS WILL BE DEDUCTED FOR UNEXCUSED ABSENCES.

Disability Accommodations:

Students requesting disability accommodations from the University must self identify to the Disability Support Services Department. Students requesting accommodations from the University must have a disability as defined by the Section 504 of the Rehabilitation and the Americans with Disabilities Act.

Final Examination:

Wednesday, December 14, 2005: 8:00 am – 10:30 am

Epidemiology EHST 3003
Environmental Health Sciences and Safety
Anderson
Fall Semester 2005

August 24- December
MWF 11:00-11:50
andersonal@mail.ecu.edu

East Carolina University
Dr. Alice L.

Assistant Professor of
Environmental Health
Belk 310

Course Description: Environmental Epidemiology is an introduction to the science of epidemiology and the statistics required to understand epidemiological studies. Topics to be covered will include longitudinal and case control studies; risk and relative risk; collection, tabulation, and analysis of data.

Instructor: Dr. Alice L. Anderson, Assistant Professor of Environmental Health, Belk 310

Texts: Control of Communicable Diseases Manual, published by the American Public Health Association
Principles of Epidemiology, 2nd Edition U.S. Dept. of Health and Human Services

General Course requirements:

- ❖ Bring textbook and spiral bound CDC text to class for each lecture & discussion.
- ❖ Read all assigned texts.
- ❖ Turn in assignments at the beginning of the hour on the due date. Late work will be discounted.
- ❖ Attendance will be recorded and counted because of class participation portion of grade.

Written Assignments:

- ❖ In addition to class casework assignments, a current popular fiction or non-fiction book is assigned. You will read the book over the semester and analyze the events to see if good epidemiological investigation techniques were used, and then write an analysis of the book (2-3 pages) in term paper format.
- ❖ Books available are found on course documents on Blackboard. Instructor approval by the third week of class for book choice is necessary.
- ❖ This will be written as a term paper according to MLA or APA style sheet format.

Course Outline and reading assignments:

Reading for this week's discussion:

Week 1 August 24, 26 Introduction LESSON ONE

Terms for Epidemiology handout

Lesson questions due Aug. 29

Week 2 August 29, Aug 31, Sept 2 *Outbreak investigation*

LESSON SIX

Lesson questions due Sept 2

Week 3 September 7, 9 *Basic measurements of Epidemiology* Proportions, rates

LESSON TWO

Lesson questions due Sept 12

Week 4 September 12, 14, 16 Distributions, Means

LESSON THREE

Lesson questions 1 due Sept 16

Week 5 September 19, 21, 23 Standard deviation, ranges

LESSON THREE

Lesson questions 2 due

Sept 23

Week 6 September 26, 28, 30 *Observations Used in Epidemiology* Validity, Reliability

LESSON THREE

Lesson questions 3 due Sept 30

Week 7 Oct. 3, 5, 7 *Sources of Data*

LESSON FOUR

All Lesson questions due Oct 7

Week 8 October 10, 12, 14 *Sources of Data*

LESSON FOUR*

**Midterm Exam
OCT.14**

Fall Break! Oct. 15-18

LESSON FOUR

Week 9 October ,19, 21 *Group projects introduction group meetings*

Study Methods : Descriptive, Prevalence

LESSON FIVE

Week 10 October 24, 26, 28

Study Methods: Experimental, Analytical,

LESSON FIVE

Week 11 Oct. 31, November 2, 4 *Study Methods*: Case Control, Co-hort,

LESSON FIVE

Week 12 Nov. 7, 9, 11 Prospective, Retrospective

LESSON FIVE

Week 13 Nov 14, 16, 18 *Interpreting Statistical Associations*

LESSON FIVE

Week 14 Nov 21 **Group project reports due** *Group projects oral reports*

Nov 23, 24, 25 Thanksgiving Break

Week 15 Nov 29 Dec 1 Dec 3 *Communicable Diseases* Group projects oral reports

November 30 TERM PAPER DUE on book reading

Week 16 Dec 2, 5, 7. Term paper discussions, *Group projects oral reports*
December 8 Exams begin

Grading Scale: A 90-100 % Excellent
 B 80-89% Above Average
 C 70-79% Average
 D 60-69% Below Average
 F Below 60 % Below Passing Standard

Grading Factors: Surprise quizzes
 Paper on book approved by instructor
 Two major exams: midterm and final
 Class attendance, participation, discussion
 Points and grades for each factor will be recorded on
 Blackboard

Attendance:

University policy states that “students are expected to attend punctually all lectures and laboratory sessions in the courses for which they are registered, beginning with the first session following registration...” Points will be deducted from final grade for unexcused absences.

Suggestions for Books: (example) Complete alphabetical list parts 1-5 on Blackboard

Kolata, Gina, 1999 Flu: the story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused it. Touchstone, New York, NY.

EHST 3060 – ENVIRONMENTAL ISSUES IN CONSTRUCTION

Fall Semester, 2005

TTh @ 12:30 – 1:45 p.m. Laboratory T @ 2 – 4 pm

Belk 101 (Allied Health)

Ed Crotts, Visiting Instructor – Environmental Health Sciences & Safety
Office Location: 310 A Belk E-mail: crottse@mail.ecu.edu
Office Phone (252) 328-2991 www.ecu.edu/hhp/ehst
Office hours: MWF – 9:00 – 11:00 am and 1 – 3 pm - TTh 9 – 10:30 am
Other times by appointment.

COURSE DESCRIPTION

A comprehensive overview of environmental health issues related to the construction industry including environmental impact of construction; hazardous materials in construction processes; and, regulatory processes & requirements.

OBJECTIVES (not necessarily in this order):

- *Understand environmental regulatory concerns for the construction industry*
- *Understand hazards associated with asbestos, lead, radon, and products used in construction*
- *Understand insect vectors and various pests associated with construction sites*
- *Understand Integrated Pest Management (IMP) principals and practices*
- *Understand the selection, use, and maintenance of personal protective equipment*
- *Understand the issues surrounding indoor air quality (IAQ) problems and control*
- *Understand pollution, pollution prevention, and pollution controls for environmental mediums – air, water, and soil*
- *Understand the proper transportation, storage, and disposal of hazardous wastes*
- *Understand the proper transportation, storage, and disposal of construction & demolition (C&D) wastes*
- *Understand erosion and sediment control procedures and plans*
- *Understand how environmental site assessments are conducted*
- *Understand the Underground Storage Tank (UST) program and UST removal procedures*
- *Understand the issues of noise and hearing conservation associated with construction activities*
- *Understand biological hazards associated with construction activities (such as histoplasmosis, legionella, etc.)*

PREREQUISITES:

GEOL 1500/1501... Introduction to Physical Geology

TEXT:

- Environmental Health, 3rd Edition by Monroe T. Morgan
- Instructor Handouts
- Assigned Web Readings

Attendance:

Attendance is essential for successful completion of this course. Perfect attendance (NO ABSENCES OF ANY TYPE) will receive 2 extra credit points on final grade. Three (3) unexcused absences are allowed but will receive a reduction of 5 points each on participation. Additional unexcused absences will result in point deductions of five (5) points from the final class grade. The ECU guidelines will be followed for classifying excused and unexcused absences (http://www.ecu.edu/undergraduate_cat/S5-3.html#025). An unexcused absence on the day a quiz or exam is given results in a zero (0) for that quiz/exam. Written evidence of emergency or illness from attending physician or counselor will be required for excused absences.

Blackboard and Email:

Blackboard (<http://ecu.blackboard.com/>) will be used to supplement the course information and readings and to assist with communication between students and faculty. Please pay particular attention to the Blackboard Announcements for updated course-related information. Students will be expected to check their email and Blackboard site daily.

Quiz Policy:

There will be three (3) non-cumulative tests during the session. Tests/Quizzes will typically be administered on Thursdays, but exceptions may occur due to scheduling and curriculum adjustments. Tests/Quizzes will be multiple choice, true/false, discussion and short answer. Pop quizzes may be administered at any time.

Course Grading Policy:

Participation.....	.....	15%
Examination #1	.....	21%
Examination #2	.....	22%
Homework & Quizzes ...	.....	20%
<u>Final Exam</u> .....	.....	<u>22%</u>

TOTAL 100%

Your grades will be computed using the following scale:

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = < 60

Disability Accommodations:

Students requesting disability accommodations from the University must self identify to the Disability Support Services Department. Students requesting accommodations from the University must have a disability as defined by the Section 504 of the Rehabilitation and the Americans with Disabilities Act.

DEPARTMENT OF HEALTH EDUCATION AND PROMOTION
ENVIRONMENTAL HEALTH SCIENCES AND SAFETY PROGRAM
EHST 3100 Injury Control
Fall, 2005, Distance Education Class

Instructor: Ed Crotts, MS, CIH, Visiting Instructor
Office hours: MWF – 9:00 –11:00 AM; 1 to 3 pm
TTh – 9:00-10:30 AM
Other times by appointment..
Contact Info: Office: 310A Belk
Office Telephone: 328-2991

Class will be taught using Blackboard.

Email: Crottse@mail.ecu.edu (typically, the best way to get me)

Catalogue Description:

Introductory course designed to acquaint the student with injury and accident control practices. Students will use internet resources to review accident investigation, hazard communication, job safety analysis and other tools for anticipating and mitigating injuries.

Grading Scale:

A=90-100% Excellent
B=80-90% Above Average
C=70-80% Average
D=60-70% Below Average
F=Below 60% Below Passing Standard
89.9 is not an A – I do not round up

Web Sites:

www.csb.org
www.fda.gov/
www.osha.gov/
www.cdc.gov/niosh/homepage.html
www.epa.gov/
www.nts.gov

Grading Factors:

Work Required	% of Final Grade
Average of Worksheet Grades/Quizzes	25
Midterm Exam	20
Project Paper	20
Final Exam	25
Class Participation	10

Semester project

Students must find and report on an accident (National Highway Safety Administration, NASA, OSHA, CSB, etc.). Paper and presentation on the process involved and causes of the accident.

Weekly topics

Work sheet on the Nation Center for Injury Prevention and Control

Model Injury and Illness Prevention Program for High Hazard Employers – California OSHA

- Responsibility
- Compliance
- Communication
- Hazard Assessment
- Accident/exposure Investigation
- Hazard Correction
- Training and Instruction
- Recordkeeping

Job Hazard Analysis

- Tools and methods of performing JHAs
- Group project - JHA for process of filling gas tank on your automobile

Elements of OSHAs Voluntary Protection Program

- Comprehensive Safety and Health Management System
 - Management Leadership and employee involvement
 - Worksite analysis
 - Hazard prevention and control
 - Safety and health training

OSHA's Hazard Communication Program

- Chemical inventory/list
- Material safety data sheets
- Employee training
- Container labeling
- Written program

Accident and incident investigation

- Information and evidence gathering and documentation
- Problem solving techniques
- Basic causes
 - Management safety policies and decisions
 - Personal factors
 - Environmental factors
- Indirect causes
 - Unsafe acts

- Unsafe conditions
- Direct Causes
 - Release of energy, hazardous material, etc.
- Dissemination of findings
 - Prevent reoccurrences of same accident
- Recordkeeping and analysis
- Workers Compensation

Review of Chemical Safety Board investigation of the West Pharmaceutical Plant explosion in Kinston, NC on January 27, 2003.

- Motor vehicle accidents
 - Causes and mitigating factors
 - Seat belts vs. airbags
- Calculations of personal risk of death or injury in a MVA.

Posting Grades:

Grades are no longer posted using social security numbers. Final grades are posted and accessible within 24 hours of receipt in the Registrar's office via the World Wide Web and the automated voice response system. Students may check their grades using their PIN through either of these options.

Attendance Policy:

University Policy states "Students are expected to attend punctually all lectures and laboratory sessions in the courses for which they are registered, beginning with the first session following registration..." **ATTENDANCE COUNTS! POINTS WILL BE DEDUCTED FOR UNEXCUSED ABSENCES.**

Disability Accommodations:

Students requesting disability accommodations from the University must self identify to the Disability Support Services Department. Students requesting accommodations from the University must have a disability as defined by the Section 504 of the Rehabilitation and the Americans with Disabilities Act.

Final Examination:

- Friday December 2, 2005 – Exam sent out
- Friday December 9, 2005 – Exam due

Syllabus - EHST 3701 – Industrial Hygiene Laboratory Spring 2005

Instructor: Ed Crotts, MS, CIH, Visiting Instructor
Office Hours: MWF – 8:30-11 AM; TTh – 9:00- Noon, other times by
 appointment.
Contact Info: Office: 310A Belk
 Office Telephone: 328-2991
 Email: Crottse@mail.ecu.edu (typically, the best way to get
me)

Course Description:

Practical experience and methods for industrial hygiene evaluation of work environments.

Required Text: Basics of Industrial Hygiene by Debra Nims; John Wiley publisher, Copyright 1999.

Supplemental Text: Various CD-Rom media, supplied by instructor; course handouts

Course Objectives:

The student will demonstrate the knowledge and ability to evaluate and recommend controls for workplace health hazards.

Student will develop better technical writing skills.

Field trips to local industries will familiarize students with actual workplaces.

Grading Criteria:

90-100	A
80-89.1	B
70-79.1	C
60-69	D
Below 60	F

Evaluation Criteria:

Laboratory write ups	80%
Attendance/Participation	20%

Attendance Policy:

Class participation is essential to success in this course. The University attendance policy will be enforced. **ATTENDANCE COUNTS! FIVE (5) POINTS WILL BE DEDUCTED FROM FINAL GRADE FOR MORE THAN 3 UNEXCUSED ABSENCES.**

Students with Disabilities:

East Carolina University seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a

covered disability must go to the Department for Disability Services, located in Brewster A-14, to verify the disability before any accommodations can occur. The telephone number is 252-328-6799.

Academic Honesty Policy:

Cheating, plagiarism – submitting another person’s work as one’s own, or doing work for another person who will receive academic credit are not permissible. The unauthorized copying of examinations, assignments, reports and term papers, or the presentation of unacknowledged material as if it were the student’s own work is also not permissible.

COURSE OUTLINE

- I. Sampling and analysis of gases
- II. Sampling and analysis of particulates
- III. Industrial ventilation and air flow measurements
- IV. Noise and Hearing Conservation
- V. Indoor Air Quality measurements
- VI. Evaluation of heat stress

Field trips – Grady White Boats, ASMO of Greenville, Brody School of Medicine, ECU Boiler Facility

DEPARTMENT OF HEALTH EDUCATION AND PROMOTION
ENVIRONMENTAL HEALTH SCIENCES AND SAFETY PROGRAM
EHST 4300 Institutional & Recreational Sanitation
Vectorborne Disease
Fall, 2005 (MWF) Belk Building
12:00-12:50

Instructor: W. E. Hill, Jr., RS, MSA, Visiting Instructor
Office Hours: MWF (1:00-2:00) TTH (9:00-11:00/1:00-2:00)
Times by Appointments also available
Contact Info: Office: 315 Belk
Office Telephone: 328-1690
Email: hillw@mail.ecu.edu

Catalogue Description: Environmental Health practices in institutions and recreational facilities including safety, infection control, and waste disposal. Institutions include nursing homes, hospital, schools, child care centers, lodging facilities, tattoo establishments and confinement facilities. Recreational facilities include swimming pools, summer camps. Vectorborne disease is limited to the U.S.

Objectives: Enforcement of Environmental Health and Safety laws in Institutions and Recreational areas often include prevention of vectorborne disease. After reading and hearing about institutional and recreational situations, students will decide upon corrective actions. Presentations will be made of these scenarios to the class.

Class Requirements:

- It is imperative to be present for guest lectures (there will be no return visits for absentees) and for field trips, **attendance is critical.**
- Two mock evaluations are required, and presentation will be made to the class on these visits. Regulations will be explained in the presentations, evaluation procedures outlined, and decision-making method with corrective action explained. A written scientific briefing report must accompany each.
- One actual site evaluation will be done with an environmental health specialist in your home county instead. This needs to be to an institutions, or recreational facility. A written scientific briefing report must be done in the format used by the Environmental health Department.

Course Outline:

Week 1 Nursing Homes and Hospitals

Week 2	Public Swimming Pools
Week 3	Child Care Centers
Week 4	Current Events Week
Week 5	Tattoo Parlor and Body Piercing
Week 6	Lodging Facilities
Week 7	Summer Camps
Week 8	Confinement Facilities
Week 9	Review and Mid-term Exam
Week 10	Rabies, Lice, Rodents, Fleas (Where are we now?)
Week 11	Current events week: What's in OUR public places?
Week 12	Indoor air pollution
Week 13	Presentation I (Your topics or trips)
Week 14	Presentation II (Your topics or trips)

Grading Scale:

A= 90-100%	Excellent
B= 80-89%	Above Average
C= 70-79%	Average
D= 60-69%	Below Average
F= 60%	Below Passing Standard

Curriculum Changes to the Bachelor of Science Degree in Environmental Health (BSEH)

The major curriculum change for the BSEH is the elimination of the current two options under the degree; Public Health and in Industrial Hygiene. This will facilitate the creation of a single generalist environmental health undergraduate degree. This overall curriculum change is being requested in order to make the graduates of the program marketable in the changing environmental health field, bring the degree requirements back in line and similar to other accredited programs, and at the recommendation of Trenton Davis, DrPH, before his retirement in 2003. Total semester hours required for the degree remains the same at 126 s.h. and includes the following changes:

- Deleting EHST 3100 Injury Control and EHST 2500 Introduction to Radiological Health
- Inclusion of revised/new courses approved by UCC on Feb 23, 2006 (EHST 3350/3351, 3370/3371, 4301, 4350/4351)
- Adding more student selection of courses within the core and electives.
- The entire degree may be completed without taking any 5000 level courses; however students may include several 5000 level courses if they choose to do so.

The following courses were approved by the Graduate Curriculum Committee on February 15th, 2006 and will be included as courses that BSEH students may elect to take within their degree:

New Course: EHST 5510 (2) Physical Safety

Renumbering: EHST 5520 (2) Biological Safety (formally EHST 6120)

New Course: EHST 5530 (2) Chemical Safety

New Course: EHST 5540 (2) Radiation Safety

Revision: (add lab) EHST 5800, 5801 (3,0) Solid & Hazardous Waste Management and Lab.

Bachelor of Science in Environmental Health Degree (BSEH)

A minimum GPA of 2.0 in all 1000 level basic science and math courses, a minimum cumulative GPA of 2.0 on at least 30 s.h., completion of EHST 2110 is required for admission to the professional phase of the environmental health sciences curriculum and EHST 4990 is required to complete the degree. Environmental health majors must pass all environmental health courses with a minimum grade of C. A student earning a D in any of these courses must petition the environmental health sciences faculty for probationary continuation. Minimum degree requirement is **126 s.h.** of credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below 42 s.h.

Required:

BIOL 1050, 1051 (3,1) General Biology and Laboratory
BIOL 2130 (4) Survey of Human Anatomy
MATH 1065 (3) College Algebra

Recommended:

PSYC 1000 (3) Introductory Psychology
SOCJ 2110 (3) Introduction to Social Work Practice with Special Populations
HIST 1051 (3) American History since 1877
RCLS 2601 (3) Leisure in Society
COMM 2420 (3) Business and Professional Communication

2. Core

.....
... 42 s.h.

Select from the following with advisor approval:

EHST 2110 (3) Introduction to Environmental Health Science
EHST 2111 (1) Introduction to Environmental Health Science Laboratory
EHST 3003 (3) Environmental Epidemiology
EHST 3200 (3) Food Sanitation Principles
EHST 3201 (1) Food Sanitation Principles Laboratory
EHST 3350 (4) Safe Water
EHST 3351 (1) Safe Water Laboratory
EHST 3370 (3) Waste Water Management
EHST 3371 (1) Waste Water Management Laboratory
EHST 3600 (3) Air Pollution
EHST 3700 (3) Industrial Hygiene
EHST 3701 (1) Industrial Hygiene Laboratory
EHST 4010 (3) Toxicological Foundations of Risk Assessment
EHST 4200 (3) (WI) Environmental Health Management and Law
EHST 4300, 4301 (3,0) Institutional and Recreational Sanitation and Laboratory

EHST 4350, 4351 (3,0) Vector Borne Disease Ecology and Laboratory
EHST 4990 (3) Environmental Health Internship
EHST 5001 (1) Environmental Health Seminar (may be taken more than once)
EHST 5800, 5801 (3,0) Solid and Hazardous Waste Management and Laboratory

3. Cognates

..... 30

s.h.

Required Cognates (24 s.h.):

BIOL 2110, 2111 (3,1) Fundamentals of Microbiology and Laboratory
CHEM 1150, 1151 (3,1) General Chemistry and Laboratory I
CHEM 1160, 1161 (3,1) General Chemistry and Laboratory II
CHEM 2650, 2651 (4,1) Organic Chemistry for the Life Sciences
PHYS 1250, 1251 (3,1) General Physics and Laboratory
MATH 2228 (3) Elementary Statistical Analysis

or

BIOS 1500 (3) Introduction to Biostatistics

Recommended Cognates (select at least 6 s.h.)

MIS 2223 (3) Introduction to Computers

PHYS 1260, 1261 (3,1) General Physics and Laboratory

GEOG 3220 (3) Soil Properties, Surveys, and Applications

or

GEOL 5710, 5711 (3,0) Ground Water Hydrology

MATH 2119 (3) Elements of Calculus

or

MATH 2121 (3) Calculus for the Life Sciences

4. Electives to complete requirements for graduation

Choose at least 6 s.h. of EHST electives at the 3000 level and above.

EHST: ENVIRONMENTAL HEALTH

2110. Introduction to Environmental Health Science (3) (F,S) Principles of environmental health practices. Emphasis on air quality, food supply, industrial hygiene, and solid and hazardous waste disposal.

2111. Introduction to Environmental Health Sciences Laboratory (1) 3 lab hours per week. P/C: EHST 2110. Lab and field techniques in principles of environmental health sciences practices. Includes water and air quality; noise; food, radiation, and biological safety; and hazardous material.

3000. Environmental Health Practice Seminar (1) (S) 2 classroom or lab hours per week P: Major or intended major in EHST. Variety of environmental health practice settings in government, industry, and elsewhere.

3003. Environmental Epidemiology (3) (F) Science of epidemiology and biostatistics required to understand epidemiological studies. Topics include longitudinal and case control studies; risk and relative risk; collection, tabulation, and analysis of data.

3060, 3061. Environmental Issues in Construction (4,0) (F,S) 3 lecture and 2 lab hours per week P: GEOL 1500, 1501. Comprehensive overview of environmental impact of construction processes, including legislative and regulatory requirements.

3200. Food Sanitation Principles (3) (S) P: Consent of instructor; C: EHST 3201. Food composition, engineering principles, processing and preservation methods, food-borne diseases, and food regulatory programs.

3201. Food Sanitation Principles Laboratory (1) (S) 3 lab hours per week. P: Consent of instructor; C: EHST 3200. Practical experience in procedures for evaluating food, milk products, and sanitizing agents.

3350. Safe Water (4) (F) P: BIOL 2110, 2111; CHEM 1160, 1161; C: EHST 3351. Fundamentals of safe water and principles of drinking water treatment and supply

3351. Safe Water Laboratory (1) (F) P: BIOL 2110, 2111; CHEM 1160, 1161; C: EHST 3350. Practical aspects of drinking water treatment and supply.

3370. Wastewater Management (3) (S) P: EHST 3350, 3351; C: EHST 3371. Fundamentals of wastewater production, collection, treatment, and safe disposal.

3371. Wastewater Management Laboratory (1) (S) P: EHST 3350, 3351; C: EHST 3370. Practical aspects of wastewater characteristics and safe disposal.

3500, 3501, 3502. Problems in Environmental Health (1,2,3) (F,S) Hours required vary with individual student assignment and/or project. 14 classroom hours for 1 s.h. credit. P: EHST major. Specific topic, area, or problem not adequately covered in current curriculum.

3600. Air Pollution (3) (F) P: EHST 2110 or consent of instructor. Evaluation

and monitoring of air pollutants, effects of air pollutants, survey of control procedures and legislation, and lab procedures in air quality investigations.

3700. Industrial Hygiene (3) (S) P: 8 s.h. of general science lab courses or consent of dept chair; C: EHST 3701. Health problems encountered in business, industrial, and other work places. Emphasis on recognition and evaluation of occupational stresses and disease prevention methods.

3701. Industrial Hygiene Laboratory (1) (S) 3 lab hours per week. P: Consent of instructor; C: EHST 3700. Practical experience and methods for evaluating work environment.

3900. Introduction to Occupational Health (3) P: 6 s.h. in BIOL, including BIOL 2130; 8 s.h. of general CHEM; or consent of instructor. Occupational diseases in terms of occupational health hazards and associated health effects.

3910. General Industry Safety (3) Technical aspect of occupational safety. Machine guarding, walking and working surfaces, hand and power tools, electrical systems, and plant layout.

3926. Construction Safety (3) Technical aspects of construction safety. Scaffolding, trenching and shoring, excavations, and building codes.

4010. Toxicological Foundations of Risk Assessment (3) (F) P: BIOL 2130; CHEM 2650, 2651. Undesirable biological responses to physical and chemical agents. Mechanisms of action at the molecular, cellular, and organ levels.

4200. Environmental Health Management and Law (3) (WI) (F) P: EHST major or minor. Processes involved in planning, facilitating, executing, evaluating, and controlling environmental health services.

4300, 4301. Institutional and Recreational Sanitation and Laboratory (3,0) (F) P: EHST 2110, 3003, 3200, 3201, 3350, 3351, 3370, 3371; or consent of instructor; 2 lecture and 2 Lab hours per week. Environmental Health practices and sanitation in institutions and recreational facilities. North Carolina Rules Governing the Sanitation of Institutions and Recreational Facilities are discussed and evaluated.

4350, 4351 Vector Borne Disease Ecology and Laboratory (3,0) (F) P: EHST 2110, 3003, 3350, 3351, 3370, 3371; or consent of instructor; 2 lecture and 2 Lab hours per week. Introductory course of vector borne diseases, their vectors and their ecology in humans and the environment.

4990. Environmental Health Internship (3) (F,S,SS) 120 hours of supervised learning experience in an approved clinical/environmental health facility. P: EHST major; minimum of 13 s.h. in EHST or consent of dept chair.

4991. Environmental Health Internship (3) (F,S,SS) 120 hours of supervised learning experience in an approved clinical/environmental health facility. P: EHST major; minimum of 13 s.h. in EHST courses or consent of dept chair.

5001. Seminar in Environmental Health (1) (S) Student, staff, and guest

speakers on current environmental health topics and research.

5010, 5011. Principles of Toxicology and Laboratory (3,1) For EHST majors but other majors accepted. P: Senior or graduate standing; 8 s.h. of general chemistry; 6 s.h. of biology, including BIOL 2130; or consent of instructor. Basics of toxicology such as physiological response and environmental sources as well as specifics of major toxins.

5020. Environmental Toxicology (3) P: EHST 5010, 5011; or consent of instructor. Effect of anthropogenic and naturally occurring toxins on environment. Toxin sources, distribution, and bioaccumulation. Covers pesticides, metals, solvents, radioactive isotopes, food additives, air pollutants, and natural plant/animal toxins.

5164. Radiological Health Field Operation (1) P: Consent of instructor. Field observation of radiological health physics, practices at nuclear fuel cycle facilities, and government nuclear facilities.

5165. Advanced Radiological Laboratory (1) P: Consent of instructor. Intensive radiological lab training at Oak Ridge Associated Universities. Tour of research facilities.

5510 Physical Safety (2) Practical application of physical safety principles in living and work environments

5520 Biological Safety (2) Formerly EHST 6120. Practical application of biological safety principles in living and work environments.

5530 Chemical Safety (2) Practical application of chemical safety principles in living and work environments.

5540 Radiation Safety (2) Practical application of radiation safety principles in living and work environments

5800, 5801. Solid and Hazardous Waste Management and Laboratory (3,0) 2 lecture and 2 lab hours per week P: CHEM 1160, 1161 or consent of instructor. Problems associated with collection, treatment, and disposal of municipal solid waste and hazardous wastes in the United States.

**APPENDIX C
(Faculty Vitae)**

Alice Anderson, PhD.

108 Southridge Drive
Greenville, NC 27858

I. Employment

Assistant Professor : August 25, 2003- Present
Environmental Health Sciences and Safety Program, Department of Health
Education and Promotion, *East Carolina University, Greenville, NC*

Medical Entomologist: 1984- August 25, 2003
State of North Carolina, Morehead City, NC

Details of the position:

- Responsibility for medical entomology in the coastal region of North Carolina.
- Consulting with over 30 county health departments on topics of public health pest problems.
- Organization and teaching classes and workshops to local workers in mosquito control.
- Eight to twenty public addresses per year on public health pest problems, and emergency response issues.
- Chief investigator in Open Marsh Water Management research to qualify the state for this technique of salt marsh mosquito management. In this project, collaboration occurred with Duke University Marine Laboratory, NC Fish and Wildlife, NOAA, ECU, US Army Corps of Engineers, and CAMA officials.
- Collaboration on projects with NC State and work on local state and regional committees for state projects in stormwater management mosquito problems, lumbering sources, and others.
- President of the North Carolina Mosquito Control Association, and president of the Mid-Atlantic Mosquito Control Association of mosquito and vector control professionals.

PROFESSOR: 1994-2003

Park College, Park University Cherry Point, NC

Details of the position:

8 week accelerated classes two nights/week

- 200 and 300 level classes taught in: Science, Technology and Society, Human Ecology, Biology.
- 200 and 300 level classes taught in American Literature, The Novel, Short Stories, The Bible, and Business Communication.

- 100 level English composition.

HIGH SCHOOL BIOLOGY TEACHER: 1983-1984

Carteret County Public Schools Beaufort, NC

Details of the position:

- Sophomore classes in biology
- Special occupational classes in marine science

RESEARCH ASSOCIATE: 1980-1981

University of Arkansas, Fayetteville, AR

Details of the position:

- Associate for multi-university grant, the Ricefield Mosquito Management Project (RMMP).
- Duties included budget management,
- Supervision of laboratory technicians,
- Identification of mosquitoes and other aquatic insects,
- Planning and execution of field work,
- Data analysis followed by report writing,
- Journal article writing.

RESEARCH ASSOCIATE: 1979-1980

Savannah River Ecology Laboratory, SRP near Aiken, SC, University of Georgia

Details of the position:

- Aquatic entomologist for an environmental impact assessment(EIS) project, preparing for the installation of a glassification plant for nuclear waste.

HIGH SCHOOL BIOLOGY TEACHER: 1967-1975

Chippewa Hills Public Schools Barryton, Michigan

Details of the position:

- Biology, ecology, physiology, and advanced biology teacher .
- Biology department chairman
- Designed biology laboratory for a new school which was implemented.
- Summer biology classes at a University Biology Station
- Biology Club advisor 6 years.
- *Delta Kappa Gamma* membership nomination and award.
- Masters degree teaching fellowship award.

II. Education

DOCTOR OF PHILOSOPHY: 1979

Bowling Green State University, 1975-1979, Bowling Green, Ohio

Detail of activities:

- Concentration in statistics and aquatic entomology.
- Taught Biology 101 mass lecture for 150 students in large lecture hall.
- Coordinated Biology 101 labs for several graduate assistants, ordering

supplies and observing teaching.

- Worked in scanning electron microscopy laboratory on two projects. Three articles published.
- Dissertation field work done at Central Michigan University Biological Station Laboratory on Beaver Island, Michigan.
- President of Graduate Student Class
- Dissertation: The Biology and Ecology of Co-existing Species of *Polycentropus* (Trichoptera: Polycentropodidae) in a Michigan Bog Lake.

Master of Science: 1974

Central Michigan University 1967-1974 Summers Mt. Pleasant, Michigan

Detail of activities

- National Science Foundation grant for teacher education: 1967-1968.
- Classes and field work at Central Michigan University Biological Station on Beaver Island, Michigan.
- Teaching and then directing Biological Summer Camp for High School students on Beaver Island.
- Nominated to *Sigma Xi, Delta Kappa Gamma*, science and teaching organizations.
- Classes in water chemistry, aquatic plants, aquatic insects botany, entomology, statistics

Bachelor of Arts: 1966

Central Michigan University 1964-1966 Mt. Pleasant, Michigan

Detail of activities

- Major: English, Minor: Biology Teaching Certificate earned
- Permanent Michigan teaching certificate earned in two years.
- Spanish scholarship Freshman year
- Teaching Fellowship awards 4 years

III. Accreditations

- Public Health Pesticide Applicator: 1984-2005.
- Teaching: Temporary Certificate North Carolina 1983.
- Teaching: Permanent Certificate, Michigan 1966- 2005.

IV. Training Completed

- Tenure and Promotion Workshop, Feb. 25, 2005
- Successful Grant Writing and Successful Collaborative Projects

Workshop, Nov. 16, 2004

- Enhancing basic Statistical Skills, Enhancing Intermediate Statistical Skills, and Enhancing Advanced Statistical skills for Research and

Instruction, June, 2004

- Public Health Pesticide Licensing 1984-2003
- Ecology and Sampling Methods. Virginia Polytechnic Institute, 1999
 - CDC Public Health Pest Control, 1987-1990

- Fundamentals of Management. State of NC. 1990
- Remote Sensing, NASA workshop for mosquito habitat. 1980

V. Publications in reverse chronological order:

Anderson, A. L. 2005. That Old Black and White Magic. Wingbeats. Vol (in press)

Anderson, A. L. 2004. An unfortunate Hyperbole that Won't Go Away. Wingbeats. Vol 15:3 p. 22-33.

[Http://www.floridamosquito.org/WING/summer2004web.pdf](http://www.floridamosquito.org/WING/summer2004web.pdf)

Anderson, A. L. 2004. Arthropod Pests and the Diseases They Carry: Prevention in Community and Athletic Settings. Athletic Therapy Today 9(3) 16-21.

Anderson, A. L., et al. 2000. Emergency Aerial Spraying in North Carolina after Hurricane Floyd, 1999. Wingbeats Vol.11:2 Summer 2000 p 4,5,27.

[Http://www.floridamosquito.org/WING/summer2000web.pdf](http://www.floridamosquito.org/WING/summer2000web.pdf)

Harrison, et al. 2000. Prevalence of *Ehrlichia ewingii* in *Amblyomma americanum* in North Carolina. J Clinical Micro. Vol.38:7. p. 2795.

Anderson, A. L., and W. W. Kirby-Smith. 1993. Effects of Open Marsh Water Management of Fish and Birds in Two North Carolina Salt Marshes. Proceedings of NJ Anti-Mosquito Association , 1992.

Anderson, A. L., Charles S. Apperson, and Richard Knake. 1991. Effectiveness of Mist-Blower Applications of Malathion and Permethrin to Foliage as Barrier Sprays for Salt Marsh Mosquitoes. J. Am. Mosq. Cont. Assn. 7(1): 116-118.

Anderson, A. L. 1989. Salt Marsh Mosquito breeding during the first season following OMWM installation in a North Carolina salt marsh. J. Florida Anti-Mosquito Association. 60(2): 37-44.

Anderson, A. L. 1988. Open Marsh Water Management and the Permitting Process in North Carolina. Workshop on Salt Marsh Management and Research, Oct. 25-27. Vero Beach, Fla. p. 25.

Anderson, A. L., M. Slaff, and W. W. Kirby-Smith. 1987. Changes in vegetation, hydrologic regime, and the distribution of larval mosquitoes and fish in two North Carolina marshes, Proceedings of the Eighth annual meeting of the Society of Wetland Scientists, May 26-29, 1987.

Anderson, A. L., M. Slaff, and W. W. Kirby-Smith. 1987. Two-year changes in flora and hydrologic regime in a *Spartina alterniflora* marsh vs. a *Juncus roemerianus* dominated marsh in North Carolina. Proceedings of Wetlands Symposium, New Orleans, La. Sept. 24-25, 1987.

Slaff, M., N. Newton, A. Anderson, and B. Engber. 1987. Vector Control Programs in North Carolina. Proc. NJ Mosq. Cont. Assn. 74: 24-26.

Parker, M., A. L. Anderson, and M. Slaff. 1986. An automatic carbon dioxide delivery system for mosquito light trap surveys. Journal of the Am. Mosq. Cont. Assn. 2(2): 236-237.

Alexander, T. C., M. V. Meisch, W. B. Kottkamp, and A. L. Anderson. 1982. Effect of Notonectids on mosquito larvae and preliminary observations of insecticide toxicity. Arkansas Farm research 23(3): 5.

Meisch, M. V., A. L. Anderson, R. L. Watson, and L. Olson. 1982. Mosquito

species inhabiting ricefields in five rice-growing regions of Arkansas. *Mosquito News* 42(3): 341-346.

Loesch, A. (former name) and J. Foran. 1978. Populations of *Heterocampa guttivitta* in a beech-maple forest on Beaver Island, Michigan. *Great Lakes Ent.* 12(1):44-45.

Crang, R. E., A. J. Loesch, and D. G. Pechak. 1978. Multivariate analysis of Phenyl Mercuric acetate effects on *Aureobasidium pullulans* ultrastructure. Proceedings of the 9th International Congress on Electron Microscopy, Toronto, Canada.

Loesch, A. and T. L. Harris. 1978. Preliminary report of the Ecology and Biology of *Polycentropus* species in a Michigan Bog Lake. Proceedings of the 26th Annual NABS Meeting, Winnipeg, Canada. P. 26.

Loesch, A. and R. E. Crang. 1978. Scanning Electron Microscopic Examination of the Net Structure and Attachments Sites of Larvae of the Genus *Polycentropus*. Proceedings of the 26th Annual NABS Meetings, Winnipeg, Canada.

Loesch, A. 1978. Fine structure of the larval retreat of the lentic caddisfly *Polycentropus* sp. Banks (Polycentropodidae). *Micron* 9(1):19-20.

Loesch, A. 1977. Populations of *Calosoma frigidum* (Coleoptera: Carabidae) in two areas of beech-maple woods during an outbreak of *Heterocampa guttivitta* (Lepidoptera: Notodontidae) on Beaver Island, Michigan. *Great Lakes Ent.* 10(3):166.

VI. Synergistic Activities

A. Noteworthy News Stories

Selinger, Jeffrey, 2004. On the Trail of a Persistent Pest, *The New York Times*, July 22, 2004. (Concerning collaborative work on Wireless Mosquito ID devices.)

B. Recent Invited Talks

Eastern NC Environmental Supervisors Association Meeting, September 16, 2004:

“Ticks and Related Topics”

Open Marsh Water Management (OMWM): Concepts and Techniques for Georgia Workshop January 28, 2004 “ North Carolina Perspective”

C. Awards

Certificate of Merit: National Environmental Health Association (NEHA) 2004 Meeting, Anchorage, Alaska

CDC Leadership Institute Award for training in Emergency Preparedness 2003-2006.

VII. References

Dr. Max. V. Meisch, Entomology Department, University of Arkansas, Fayetteville, Ar. Phone: (501) 433-5287

Dr. Marc Slaff, Supervisor, Morris Co. , NJ Extermination Commission. P.O. Box 405, Morris Plains, NJ 07950 Phone: (201) 538-3200

Dr. Nolan Newton, Medical Entomologist, North Carolina Division of Health Services, Raleigh, NC Phone: (919) 733-6407

Ms. Anne Thomas, Dare Co. Health Director, Manteo, NC Phone: (252) 441-3224.

Col. Bart Bartells, (ret.), Past Director Park College extension campus at Cherry Point Marine Air Station. Phone: (252) 247-0985

Curriculum Vitae

Edward Douglas Crotts
116 South Woodstock Dr.
Greenville, NC 27834
252-765-9376
crottse@mail.ecu.edu

Education

1976 - Bachelor of Science in Environmental Health from East Carolina University

1981 - Master of Science in Environmental Health from East Carolina University

Teaching Experience

East Carolina University – Visiting Instructor teaching classes on ‘Toxicological Fundamentals of Risk Assessment’, ‘Air Pollution’, ‘Onsite Waste Water,’ ‘Epidemiology’ ‘Environmental Issues in Construction’ and ‘Introduction to Environmental Health Sciences’. I have taught classes on various topics for members of the ECU EHST faculty.

Burroughs Wellcome / GlaxoWellcome – As an Industrial Hygienist, I trained environmental operators, laboratory, engineering and chemical production personnel on chemical hazard recognition, use of personal protective equipment and respirators, machine guarding, confined spaces and work permit procedures. I also was responsible for training of employees potentially exposed to ethylene oxide, asbestos, acrylonitrile and formaldehyde.

I was the moderator at a round table discussion of Asbestos Hazards at the ASSE Eastern Region Professional Development Conference in 1991.

Work Experiences

Lecturer and Visiting Instructor at East Carolina University – Part time 1/00 to 5/02 and full time 8/02 to present. In addition to teaching duties I am the advisor to the Environmental Health Club and advise students on their course selection.

President of Industrial Hygiene Concerns, Inc. – 3/01 to present - Industrial Hygiene Concerns is a consulting firm specializing in respiratory and personal protective equipment programs, employee exposure monitoring, asbestos programs and employee safety training, indoor air quality investigations.

Industrial Hygienist with Catalytica Pharmaceuticals – 8/97 to 3/01 - In August of 1997, GlaxoWellcome sold the Greenville manufacturing facility to Catalytica Pharmaceuticals Inc. In addition to maintaining the responsibilities below I served as the Radiation Safety Officer and Chair of the Toxicology Committee. I

was responsible for the health and safety evaluations of new pharmaceutical products produced at Catalytica's Greenville manufacturing facility.

Industrial Hygienist for Burroughs Wellcome Co. / GlaxoWellcome Inc. – 10/82 to 8/97 – I conducted assessments of employee exposures to hazardous chemicals. Made indoor environmental assessments to determine types and concentrations of contaminants and recommend ventilation, engineering or sanitation interventions needed to eliminate any hazards. I designed and implemented ventilation systems for the control of environmental hazards. I was responsible for organizing and reporting Hazard and Operability Studies for new chemical manufacturing processes in the Chemical Development Lab from 1992-95. Conducted incident and accident investigations for the determination of root cause. I was responsible for writing Material Safety Data Sheets for the active ingredients in Burroughs Wellcome products.

I served as a member of Burroughs Wellcome Co.'s Emergency Medical Response Team from 1983 to 1994 and the Hazardous Materials Response Team from 1987 to 1991.

In 1984-86, Burroughs Wellcome Co. was the first company to find a drug that was effective against the AIDS virus. Azido-thymidine (AZT) was put into double blind clinical trials. The one-year clinical trials were stopped after only six months when the efficacy of AZT to increase the survival of AIDS patients was conclusively shown. Burroughs Wellcome Co. received a use patent for AZT and the fastest ever Food and Drug Administration approval of a new drug. Due to the large quantity of AZT needed, the drug skipped any chemical development and went from laboratory scale to full production. I was responsible for the hazard communication training and air monitoring for employees handling new chemicals required for the synthesis of AZT.

Control Scientist for Burroughs Wellcome Co. – 1/81 to 10/82 - Performed environmental assessment during sterile product manufacture to ensure the effectiveness of engineering controls on microbial and particulate contamination. Conducted antibiotic assays to ensure product potency. Assisted with process validation studies.

Sanitarian in Edgecombe County NC – 10/76 to 8/78 - I performed soil assessments to determine acceptability for subsurface sewage treatment systems. This included the design of the treatment system based on the projected wastewater flow and the soil characteristics. To protect private wells from contamination the location of drinking water sources was on the Land Improvement Permit. I was also responsible for inspecting county restaurants and issuing grades according to the NC Food Sanitation Regulations. Resolving complaints between neighbors could be especially challenging in a rural NC county.

Research Experience

Masters thesis was on Microbial Depuration and Bacterial Identification in the Brackish water Clam, *Rangia cuneata*. I designed a depuration facility to clean contaminated clams.

Graduate Assistant to Dr. Bernard Kane, working on a grant to determine any microbial hazards associated with *Rangia cuneata*.

At Burroughs Wellcome I assisted with developing methods to validate product steam sterilization processes utilizing a steam retort and heat resistant bacteria.

GlaxoWellcome developed Occupational Exposure Limits for hazardous Burroughs Wellcome products. I helped develop analytical methods to determine the concentration of these products in air.

Certifications and Accreditations

Certified in the Comprehensive Practice of Industrial Hygiene

Accredited as an Asbestos Supervising Air Monitor and Inspector in North Carolina

Professional Organizations

Member of the American Industrial Hygiene Association

Member of the American Society of Safety Engineers

Served as secretary, vice president and president of the Eastern Carolina

Chapter of the American Society of Safety Engineers from 1988 to 91 and am currently chair of the Program Committee

Member of the Board of Directors for the East Carolina Safety and Health School

William E. Hill, Jr.
224 East Woodstock Drive
Greenville, NC 27834
(252) 353-0199
hillw@ecu.edu

OBJECTIVE

Seeking a position in the management of environmental health and safety program. Utilizing skills and experience in planning, development, oversight and monitoring of environmental health/food safety programs. Specialized experience and knowledge of environmental health principles and procedures.

HIGHLIGHTS

- Over 20 years of knowledge and experience in interpreting federal, state and local food safety rules emphasizing a collaborative yet decisive style. Provided oversight and conducted nationally recognized food safety courses for owners, managers and employees of foodservice establishments.
- Provided administrative and procedural support of different environmental health activities pertaining to food safety education. Conducts outreach efforts to identify the section's constituencies, assess their needs, and solicit feedback on information policies.
- Ability to work in coordination with many different agencies and stakeholders.
- Excellent interpersonal skills
- Represented the division on state policy development and rules governing food safety. Served as a project/team member to provide critical analyses and recommendations of food safety education studies, program plans and proposals.

PROFESSIONAL EXPERIENCE

(Cumberland County, Nash County and Craven County Health Departments)

MANAGEMENT

- Planned and adhered to a budget constraints.
- Supervised staff involving training, workflow, quality control, and conflict resolution.
- Provided leadership, administrative oversight and programmatic support for food, lodging and institutions sections of environmental health.
- Provided expertise regarding a wide range of food related issues for children, businesses and the public.
As chairman of the Environmental Health Education and Marketing Committee, revitalized the group, provided leadership and increased recognition in the community.

DEVELOPMENT/MOTIVATION

- Effectively worked at state and regional level in policy administration and program development.
- Strong collaboration and communications skills, ability to utilize data for assessment and evaluation.
- Revised standard operating procedures (SOP) for food safety programs.
- Adept at building productive relationships with industry, regulatory authorities, and the public.
- Knowledge of statutes, regulations, and precedent decisions related to food safety. Knowledge of practices and principles of environmental health administration. Analyze data and information concerning program operations in order to evaluate effectiveness. Communicate effectively orally and in writing with division staff, industry representatives and community organizations.

WORK HISTORY

1974-1978 United State Air Force, Plattsburgh AFB, NY
1984-1994 Cumberland County Health Department
Fayetteville, NC
1994-1995 Nash County Health Department

Nashville, NC
1995-Present Craven County Health Department

EDUCATION

B.S. Environmental Science and Natural Resources, Delaware State University,
Dover, DE, (1983)

Masters of Science in Administration, Central Michigan University, Mount
Pleasant, MI,

(2003)

Daniel Downey Sprau, DrPH, RS, CIH, CSP
Associate Professor, Environmental Health Sciences Program
Department of Health Education and Promotion
College of Health and Human Performance
East Carolina University

Education:

1985 Dr.P.H., Environmental Health Management, University of Michigan, Ann Arbor, MI
1973 Master of Medical Science Degree in Radiological Health, Emory University, Atlanta, GA
1986 M.S., Environmental Health, East Carolina University, Greenville, NC
1971 B.S., Physics, Adrian College, Adrian, MI
1970 University of Graz, Graz, AUSTRIA

Experience:

East Carolina University – Academic

Associate Professor - Tenured June 1, 1994
Environmental Health Sciences and Safety Program
Department of Health Education and Promotion
College of Health and Human Performance
Associate Professor, August 2002 to Present

Department of Environmental Health Sciences, Safety and Technology
School of Industry and Technology
Associate Professor, August 1999 to 2002

Department of Family Medicine - School of Medicine
Associate Professor, July 1993 to July 1999
Associate Director, Division of Prospective Health, July 1993 to 1998

Department of Radiation Oncology - School of Medicine
Assistant Professor July 1991 to July 1997

Department of Environmental Health, School of Allied Health Sciences
Associate Professor, July 1992 to 1998
Adjunct Associate Professor, July 1988 to June 1992

Department of Physics - College of Arts and Sciences
Adjunct Assistant Professor, July 1991 to 1993
Adjunct Instructor, January 1989 to January 1992

Department of Preventive Med. and Public Health Policy
Assistant Professor, July 1989 to July 1991

Appointment to the Graduate Faculty starting 1991.

East Carolina University - Administrative

Associate Director
Office of Prospective Health
East Carolina University School of Medicine
July 1997 to July 1998

Director
Office of Radiation and Biological Safety
East Carolina University School of Medicine
Pitt County Memorial Hospital
July 1992 to 1997

Director
Office of Radiation Safety
October 1981 to June 1992

Educational Leave of Absence
University of Michigan School of Public Health
September 1980 to October 1981

Radiation Safety Officer
June 1976 to September 1980

STRAHLUNG SERVICES, Inc.

Radiation Consultant
NC License #074-1163-1
NC Qualified Expert #S000474

**U.S. PUBLIC HEALTH SERVICE - Commissioned Officer
Health Services Officer**

Bureau of Radiological Health, Food and Drug Administration-
DHHS

Active Duty - November, 1973 to June, 1976. Rockville,
MD

Inactive Reserves - June, 1976 to Present

Certification:

Certified Industrial Hygienist - CIH # 4555 (11-89)
American Board of Industrial Hygiene
Certified Safety Professional - CSP # 10005 (8-90)
Board of Certified Safety Professionals
Registered Sanitarian – RS NEHA

Professional Societies: American Biological Safety Association
American Industrial Hygiene Association
American Academy of Industrial Hygiene
American Conference of Governmental Industrial Hygienists
American Society of Safety Engineers
National Environmental Health Association
Health Physics Society - National
Health Physics Society - North Carolina Chapter
International Radiation Protection Association

Professional Service:

N.C. Radiation Protection Commission Member

Chair – Emergency Response Committee
Radioactive Material Control Committee
Non-Ionizing Radiation Committee

International Atomic Energy Agency (IAEA) - Vienna, Austria

Consultant:

19-23 February 1996 - Advisory Group Meeting

Handling, Treatment, Conditioning and Storage of Radioactive Waste 14-18 April 1997 - Consultants Meeting
Management of Medical Radioactive Waste

26-30 May 1997 - Advisory Group Meeting
Management of Medical Radioactive Waste

November 2004 – Consultant Orphaned Sources of Radioactive Material Almaty, Kazakhstan

Publications:

Sprau, D.D., Handbook of Chemical Health and Safety, edited by Robert J. Alaimo. American Chemical Society, 2001. pp.704. Chapter 63 on Radiation Fundamentals. ISBN 084 1236704.

Sprau, D.D., et. al., "Management of small quantities of radioactive waste" IAEA-TECDOC-1041 International Atomic Energy Agency, Vienna Austria, September 1998.

Edwards, B., Thai, L.X., **Sprau, D.D.**, An Evaluation of Two Sample Preparation Methods for Measuring ^3H and ^{14}C in Incinerator Ash and Spent Lime. *Health Physics* January 2002 Vol. 82 Number 1 Pages 109-113.

Sprau, D.D., and Emery, Robert J., Chapter 29 on Radiation, *Environmental Health Secrets*, edited by Luanne Kemp Williams and Ricky Langley, MD, MPH. ISBN 1560534087.

Sprau, D.D. Handbook of Chemical Health and Safety, edited by Robert J. Alaimo. American Chemical Society, March 2001. Page 704. Chapter on *Radiation Fundamentals*. ISBN 084 1236704.

Sprau, D.D International Conference on Incineration and Thermal Treatment Tech. May 8-12, 2000 Portland, Oregon: *The New East Carolina University Medical Waste Incinerator: Combining A Wet Scrubber With Granular Carbon Bed for Air Pollution Control to Meet New Source Performance Standards and (WASTE to ENERGY)*

Emery, R.J., Sawyer, R.L. and **Sprau, D.D.**, Assessing the Service Provided by an Institutional Radiation Safety Survey Program@ Health Physics Vol. 70, No. 5, pp. 741-743, May 1996.

Emery, R.J., Johnston, T.P., and **Sprau, D.D.**, Simple Physical, Chemical, and Biological Safety Assessments as part of a Routine Institutional Radiation Safety Survey Program@ Health Physics Vol. 69, No 2, pp. 278-280, August 1995.

Langley, R.L., **Sprau, D.D.** and Dolezal, J.M., "Assessing Personal Occupational Safety and Health Training for Students at U.S. Medical Schools" Academic Medicine, Vol. 67, No. 9, pp. 603-605, Sept. 1992.

Emery, R.J., **Sprau, D.D.**, Lao, Y.J. and Pryor, W.H., "Release of Bacterial Aerosols During Infectious Waste Compaction: An Initial Hazard Evaluation for Health Care Workers", American Industrial Hygiene Association Journal Vol. 53(5) pp. 339-345, May, 1992

Emery, R.J., Jeanette, M.T., **Sprau, D.D.**, "Characterization of Low-level Radioactive Waste Produced by a Large University/Hospital Complex", Health Physics, Vol. 62 Number 2, pp. 183-185, 1992.
Emery, R.J., **Sprau, D.D.** and Harris, R.J., "Estimated Committed Dose Equivalent from the Volatilization of S-35 labeled Methionine Compounds" Radiation Protection Management, Vol. 7, No. 4, pp. 51-57, 1990.

Emery, R.J., Watson, J.E. and **Sprau, D.D.**, "Retention and Subsequent Release of Radioactivity from the Incineration of Waste Containing Microspheres" Health Physics, Vol. 59, No. 6, pp. 911-914, 1990.

Daniel D. Sprau, DrPH, RS, CIH, CSP
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Environmental Health Sciences Program
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College of Health and Human Performance
East Carolina University

Greenville, NC 27834

252.328.4249 office
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Greenville, NC 27834

252.355.2712 home
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Max A. Zarate B., MSc MPH PhD

310-B Allied Health Belk Building
Greenville, NC 27858-4353

(252) 328 5597
(252) 328 0380 [fax]
(404) 729 3278 [mobile]

zaratem@mail.ecu.edu

KEY QUALIFICATIONS

Knowledge:

- The Water Cycle and Environmental Epidemiology
- Safe Water –from the Source to the Tap
- Water Reclamation and Wastewater Reuse
- Industrial Ecology and Solid Waste Management

Skills:

- Water Quality Management –Monitoring and Surveillance Programs
- Sanitary Inspections of Drinking Water, Wastewater, and Solid Waste Systems
- Water Treatment Technologies/Hygiene Practices at Household Level
- Exposure Assessment and Risk Analysis

Abilities:

- Community Organization and Social Capital
- Multidisciplinary Team Player
- Environmental Health Education and Communication
- Network Building in the Water, Environment, and Health Sector

EDUCATION

Ph.D.	Environmental Health Sciences	2001	University of California, Berkeley, U.S.A.
M.P.H.	Environmental Health Sciences	1995	University of California, Berkeley, U.S.A.
M.Sc.	Water Quality Management	1995	University of Surrey, U.K.
Chemist	Chemistry and Chemical Processes	1989	Universidad Mayor de San Simón, Bolivia.

ACADEMIC EXPERIENCE

August 2004-Present

Assistant Professor. East Carolina University (ECU), College of Health and Human Performance, Health Education and Promotion Department, Environmental Health and Safety Program. Greenville, NC

- Courses Teaching: (1) Drinking Water Supply and Wastewater Treatment and (2) Onsite Wastewater Treatment.
- Course Teaching and Developing: (3) Elements of Environmental Engineering; and (4) Safe Water and Wastewater Management (theory and lab).
- Researching: (1) Water Corrosivity and Lead Dissolution; (2) Ferric Iron in a Small Drinking Water System-A Community Based Approach; (3) Nutrients Removal and Reclamation from Wastewater; and (4) Water Management and Health in Rural and Urban Populations.

September 2005 – Present

Adjunct Assistant Professor. ECU/Brody School of Medicine's Master of Public Health (MPH) Program.

Coordinator of the MPH-Environmental and Occupational Health option.

August 2004 – Present

Adjunct Lecturer. University of California-Berkeley, School of Public Health, Center for Entrepreneurship in International Health and Development. Berkeley, CA

Guest Lecturer. Universidad Mayor de San Simón, MS in Environmental Engineering Program. Cochabamba, Bolivia

- Taught a course on Natural Systems for Wastewater Treatment, October 2004.

November 2003-May 2004

Guest Researcher. National Institute for Public Health and National Center for Epidemiology and Environmental Health. Universidad Mayor de San Francisco Xavier, Sucre/La Paz, Bolivia.

- Reviewed proposal to create an Environmental Health Program for the Ministry of Health.

Lecturer/Volunteer. Water and Academic Institutions in Bolivia and Peru.

- Lectured on (1) Principles of Environmental Health, (2) Sustainable Water Resources Management, and (3) The Public Health Action Plan in a Rural Town in Guatemala.
- Advised water and environmental authorities in Bolivia on water technology and health issues.

August 2002-May 2003

Assistant Professor. Fort Valley State University/Master of Public Health in Environmental Health Program. Fort Valley, GA, U.S.A.

- Developed and taught four graduate courses: (1) Environmental Pollution, (2) Environmental Health Hazard Management, (3) Epidemiology, and (4) Environmental Analyses.
- Developed and co-taught Environmental Microbiology and developed the Toxicology course.

- Advised students on research methods; attended faculty meetings; served in the graduate studies committee; presented work in an international event; and reviewed two textbooks.
- Started contact with federal and state health agencies.

January-May 2003

Instructor. Morehouse School of Medicine/MPH Program. Atlanta, GA, U.S.A.

- Taught Introduction to Environmental Health; member of the International Track Faculty Group.

June 2000-March 2001

Dissertation writing

July 1994-May 2000 (except for July-September 1998)

Graduate Student Researcher IV, III, and II. UC Berkeley's Applied Algae Research Group & Lawrence Berkeley National Laboratory/Earth Science Division. Berkeley, CA, U.S.A.

- **Developed and validated analytical methods to determine fate of soluble and particulate selenium (Se) in the components of an algal-bacterial system and determined rates of Se removal.**
- **Estimated minimization of wildlife and human exposure to Se in the San Joaquin Valley (SJV).**
- **Design, construction, and monitoring of an algal-bacterial system treating drainage water in SJV.**
- **Monitored real, demonstration, and pilot scale wastewater treatment systems.**
- **Designed and built slow sand filter units for a water reclamation project.**
- **Trained junior and mid-level water engineers from Bolivia and the U.S.-Mexico border, interns, and junior graduate students on the fundamentals of advanced integrated wastewater pond systems.**

February 1993-May 1994

Graduate Student. University of Surrey, Guildford, England, U.K.

- **Validated microscopic and spectroscopic methods to determine particle size distribution in water samples monitoring performance of a new multistage water filtration pilot plant.**
- **Participated in designing, constructing, and monitoring multiple-stage filtration pilot plants.**

November 1992-January 1993

Visiting Researcher. UC Berkeley's Applied Algae Research Group/Sanitary Engineering and Environmental Health Research Laboratory –Richmond Field Station. Richmond, CA, U.S.A.

- **Performed literature review on wastewater treatment systems and environmental pollution.**

August 1991-October 1992

Lecturer. Universidad Privada del Valle/College of Engineering. Cochabamba, Bolivia

- Developed and taught a Leather and Ceramic Industry course –focus: industrial ecology.

Associate Research Director. Universidad Mayor de San Simon (UMSS)/Water Program. Cochabamba, Bolivia

- Planned research and assembled team to study drinking- and waste-water treatment systems.

March 1990-June 1991

Young Professional Resident. Centro Panamericano de Ingeniería Sanitaria y Ambiental, CEPIS/PAHO/WHO. Lima, Peru

- Completed an industrial ecology case-study for the leather industry and wrote guidelines.
- Trained junior-level sanitary engineers during the conduction of the case-study.

September 1988-January 1990

Associate Research Director. UMSS/Water Program. Cochabamba, Bolivia

- Participated in designing and implementing a monitoring water quality program for 21 rural drinking water treatment and supply systems.
- Participated in training community members for the organization of their local water committees.

August 1987-August 1988

Visiting Researcher. UC Berkeley's Applied Algae Research Group/Sanitary Engineering and Environmental Health Research Laboratory, Richmond Field Station. Richmond, CA, U.S.A.

- Participated in the upgrade of a pilot plant to remove Se from agricultural drainage water.

PROFESSIONAL EXPERIENCE

September 2005 – Present

Research Consultant. Greenville Utilities Commission/Water Resources Department.

- Determination of soluble and particulate lead in drinking water, and nutrients removal and reclamation in wastewater.
- Consultant.* Program for the Rural Carolinas and Episcopal Hispanic Ministry.
- Ferric iron in a small system supplying drinking water to a mobile home park – A community-based participatory approach.

February-August 2004

Wastewater Technology Consultant. Local Water Company (SEMAPA). Cochabamba, Bolivia

- Monitoring and evaluating a project to upgrade and design a 12MGD wastewater treatment plant.

November 2003-August 2004

Volunteer. Community Members of District Five, Tiquipaya, Cochabamba, Bolivia

- Community leaders and members of water committee education on water resources management.

April 2002-July 2004

Head Public Health Action Plan/Consultant. Ixtatán Foundation. U.S.A.- Guatemala

- Designed a public health action plan applying social capital principles in rural Guatemala.
- Developed a monitoring drinking water quality and a solid waste management programs.
- Performed secondary data analyses from the local Health Center –incidence of diarrheal diseases.
- Designed an environmental education component on water and health issues.
- Drafted strategy to create networks of collaboration to strengthen the public health action plan.

April 2-9, 2002

Consultant. Oswald Green, LLC/Ixtatán Foundation. U.S.A.-Guatemala

- Conducted a town-hall meeting to identify and prioritize key community-public health problems.
- Planned and designed strategies to address community-public health problems.
- Conducted sanitary surveys for drinking water systems, and disposal of wastewater and solid waste in San Mateo Ixtatán.

January 2002-May 2002

Researcher. Refugee Women's Network (RWN). Decatur, Georgia, U.S.A.

- Designed questionnaire, interviewed personnel and Board of Directors, and reported findings.

May 2001-March 2002

Consultant. Oswald-Green, LLC. Concord, CA, U.S.A.

- Produced technical bulletins.

July-September 1998

***Consultant.* Pan-American Health Organization (PAHO/WHO) – La Paz, Bolivia.**

- **Developed questionnaire and conducted survey on how the role of water institutions, human resources, and interpretation of policy may impact diarrheas incidence in five Bolivian cities.**
- **Proposed guidelines to implement a sustainable wastewater management program in Bolivia.**

August 1991-October 1992

***Director.* Municipality/Urban Sanitation Bureau. Cochabamba, Bolivia**

- **Chaired county task force to control cholera epidemic (1992); designed preventive program.**
- **Evaluated a \$3.25 million project to enhance municipal solid waste management.**
- **Designed, implemented, and directed the municipal solid waste management and public health plans.**

LANGUAGES

- Spanish: Native language; English: Fluent; Portuguese: Proficient in verbal and reading.

ACADEMIC AND PROFESSIONAL GEOGRAPHIC EXPERIENCE

- U.S., U.K., Bolivia, Guatemala, and Peru

PROFESSIONAL AFFILIATIONS

- American Association for the Advancement of Science (AAAS)
- American Public Health Association (APHA)
- APHA's Latino Caucus
- North Carolina Environmental Justice Network (NCEJN)
- Asociación Boliviana de Ingeniería Sanitaria (ABIS), Cochabamba

HONORS/AWARDS

- Advisory Board – Clean Water for North Carolina (2005)
- Panelist, International Safe Drinking Water 2003 Conference. Atlanta, GA (2003)
- Nominated head of the students committee for the Environmental Health Sciences Graduate Group Review. University of California, Berkeley (1998)
- The Doctoral Student Support Award for Research. University of California, Berkeley (1998)
- Member of Honor, Asociación Boliviana de Ingeniería Sanitaria (ABIS)-Cochabamba (1998)
- International Health Focus Group, co-Chair. University of California, Berkeley (1995-1997)
- The British Council/International Resource Development Ltd. Scholarship, U.K. (1993-1994)
- Pan American Center for Sanitary Engineering and Environmental Sciences/PAHO-WHO Young Professional Resident Scholarship, Lima, Peru (1990-1991)

PUBLICATIONS (2000-Present)

Dissertation:

The Fate of Selenium in an Algal-Bacterial System in the San Joaquin Valley of California, Public Health Considerations, University of California School of Public Health, Berkeley, March 2001.

Book Reviews:

Zarate MA (2004) "Wastewater Treatment, Biological and Chemical Processes," by Henze M, Harremoës P, Jansen JIC, and Arvin E (2002). 3rd edition, Springer Publishers. 430 pp, 193 figures, and 88 tables. *Waste Management* 24(2):221. "Ecosystem Change And Public Health: A Global Perspective," edited by Joan L. Aron and Jonathan A. Patz (2001). The Johns Hopkins University Press. 480 pp.

Posters:

Zarate MA, Wilcox J, Glascoff MA (2005) *Innovative Methodology to Gather Data on Perceptions of Pharmaceutical and Personal Care Products among Water Operators from Systems along the Tar-Pamlico River*. Poster accepted at the 133rd APHA's Annual Meeting & Exposition to be held in Philadelphia, PA. December 10-14.

Tajik M, De Leon Angel ME, and Zarate MA (2005) *Inter-community Coalition Building, Solidarity, and Public Policy*. Poster accepted at the 133rd APHA's Annual Meeting & Exposition to be held in Philadelphia, PA. December 10-14.

Papers and/or Oral Presentations:

Zárate MA, Rojas JM, Arzabe JO, and Stone HL (2005) Innovative Approaches to Strengthening the Water and Health Sector in Latin America: Experiences in Guatemala and Bolivia. Paper and oral presentation. Proceedings, Learning Alliances Symposium. Delft, the Netherlands, June 6-9.

Zarate MA (2003) "El Plan de Acción de Salud Pública para un Area Rural de Guatemala." Oral Presentation at the Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS/PAHO/WHO). Lima, Peru, December 22.

Zarate MA (2003) "Principios de Salud Ambiental." Oral Presentation at the National Institute for Public Health and National Center for Epidemiology and Environmental Health. Sucre, December 2.

Zarate MA (2003) "Principios de Aguas Residuales y Lagunas Tipo Oswald." Oral Presentation at the X Congress of ABIS. La Paz, November 28.

Zarate MA (2003) "Plan de Acción de Salud Publica en un Area Rural de Guatemala." Oral Presentation at the X Congress of ABIS. La Paz, November 27.

Zarate MA (2003) "Lagunas Tipo Oswald." Oral Presentation at the Water Company of Cochabamba, Bolivia (SEMAPA). November 20.

Zarate MA (2003) "Principios de Manejo de Residuos Sólidos." Oral Presentation at the Bolivian Association of Sanitary and Environmental Engineering (ABIS). Cochabamba, November 17.

Zarate MA (2003) "Manejo Sostenible de Recursos Hídricos." Oral Presentation at the Water Company of Cochabamba, Bolivia (SEMAPA). November 13.

Zarate MA (2003) "Ongoing Challenges in the Water and Sanitation Sector in Latin America: Experience in Bolivia and Guatemala." MPH Program/Emory Rollins School of Public Health. October 16.

Zarate MA (2003) "Challenges in Environmental Health." Presented at the 1st Faculty-Graduate Students Meeting of the MPH-EH Program at Fort Valley State University. January 24.

Zarate MA (2002) "Manejo Transparente y Sostenible de los Recursos Hidricos." Oral presentation before the IX Congress Bolivian Society of Engineers. Cochabamba, Bolivia, September 11-14.

Zarate MA (2002) "The Water Cycle: An Environmental Health Perspective." International Health Track Program at Morehouse School of Medicine, Atlanta, Georgia. February.

Zarate MA (2001) "Agua y Salud." Oral presentation at the School of Architecture, Universidad Mayor de San Simón; at the Centro de Mujeres Soberanía y Paz; and at the Engineering and Architecture Department, Universidad Privada Boliviana. Cochabamba, Bolivia, May 5-8.

Zarate MA, Lundquist TJ, Green FB, and Oswald WJ (2000) "Métodos Analíticos como Herramienta para la Evaluación de una Planta de Lagunas Integradas para la Remoción de Selenio en el Valle San Joaquín, California." Memorias de la I Conferencia Latinoamericana en Lagunas de Estabilización y Reuso, Cali, Colombia, October 24-27.

Zarate MA, Lundquist TJ, Mountford S, Quinn N, Green FB, Leighton T, Oswald WJ (2000) "Performance of an algal-bacterial selenium-removal system in the San Joaquin Valley of California." Paper presented before the 219th American Chemical Society National Meeting. San Francisco, California, U.S.A. March 26-30.

Zarate MA, Mountford S, and Oswald WJ (2000) "Selenium Determination In Agricultural Drainage Treated In An Algal-Bacterial Selenium Removal System In The San Joaquin Valley Of California." Paper presented at the 219th American Chemical Society National Meeting. San Francisco, California, U.S.A. March 26-30.

Reports:

Zarate MA (2004) "Evaluación Técnica del Estudio y Diseño de Alternativas de Tratamiento para Aguas Residuales." Interim and Final Reports, SEMAPA, February-August 2004. Cochabamba, Bolivia

Zarate MA (2003) "Trip Report to Bolivia, November 12-December 23." Oswald-Green LLC. 9 pp plus appendix.

Zarate MA (2003) "Trip Report August 7-19." Ixtatán Foundation. 12 pp plus illustrations.

Zarate MA (2003) "Trip Report June 12-28." Ixtatán Foundation. 17 pp plus illustrations and appendices.

Zarate MA (2003) "Trip Report March 7-16." Ixtatán Foundation. 14 pp plus illustrations and appendices.

Zarate MA (2002) "Trip Report July-August." Ixtatán Foundation. 16 pp plus appendices.

Zarate MA (2002) "Trip Report June." Ixtatán Foundation. 18 pp plus appendices.

Zarate MA (2002) "Trip Report April." Oswald-Green, LLC & Ixtatán Foundation.
16 pp plus appendices.

Zarate MA (2000) "Estudio de Evaluación de la Demanda y la Oferta Local para
las Investigaciones y Servicios del Centro de Agua y Saneamiento Ambiental."
Draft-Report prepared for the Belgian Cooperation to the University of San
Simón, Cochabamba, Bolivia. July:16 pp plus appendixes.

APPENDIX D

See webpage for larger image:

Facilities Renovations

<http://www.ecu.edu/cs-hhp/hlth/EHST/Environmental-Health-Sciences-Accreditation.cfm>

APPENDIX E

(Academic Program Assessment)



ACADEMIC PROGRAM
ASSESSMENT REPORT

Health Education and Promotion
BS in Environmental Health

(Academic Department & Program)

August 2002 – May 2003

(Assessment Period Covered)

November 15, 2002

(Date Submitted)

Submitted by: David M. White, Chair _____
(Departmental Chair or Faculty Assessment Representative)



Division of Student Life
ASSESSMENT REPORT

Health Education and Promotion
BS in Environmental Health

(Academic Department & Program)

August 2002 – May 2003

(Assessment Period Covered)

November 15, 2002

(Date Submitted)

Expanded Statement of Institutional Linkage:

Institutional Mission/Goal(s) Reference: The educational mission is to provide students with a rich, distinctive undergraduate and graduate educational experience. The university is committed to developing each learner's ability to discover, evaluate, and communicate knowledge; to make informed decisions; and to recognize a decision's ethical dimensions. The university also is committed to imparting a sense of citizenship and personal responsibility, fostering lifelong learning, and nurturing an understanding of the interdependencies of people and their environments.

Academic Program Mission Statement: The mission of the Department of Health Education and Promotion is to achieve excellence in teaching, research, and service as the department ultimately strives to promote and protect the health and well-being of the population.

Objective:

1. B.S.E.H. graduates will be prepared for employment in the field.

2. The B.S.E.H. program will provide graduates with preparation necessary to meet professional/registration requirements.



Division of Student Life
ASSESSMENT REPORT

3. Upon completion of the B.S.E.H. degree, graduates will have adequate background to continue studies in environmental health and safety.

**Health Education and Promotion
BS in Environmental Health**

(Academic Department & Program)

August 2002 – May 2003

(Assessment Period Covered)

November 15, 2002

(Date Submitted)

Intended Educational Objective: B.S.E.H. graduates will be prepared for employment in the field.

First Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success: Evaluation of internship performance using faculty-developed guidelines. At least 90% of students who serve internships will receive an evaluation of “satisfactory” or “commendable” by the external supervisor.

Description of Data Collection & Assessment Results:

Use of Results to Improve Program:

Second Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success: Faculty developed survey of employers of program graduates. At least 80% of employers who respond to a survey will agree or strongly agree with the statement: “ECU Environmental



Division of Student Life
ASSESSMENT REPORT

Health Science graduates are adequately prepared to assume entry-level responsibilities.

Description of Data Collection & Assessment Results:

Use of Results to Improve Program:

Health Education and Promotion
BS in Environmental Health

(Academic Department & Program)

August 2002 – May 2003

(Assessment Period Covered)

November 15, 2002

(Date Submitted)

Intended Educational Objective: The B.S.E.H. program will provide graduates with preparation necessary to meet professional/registration requirements.

First Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success: Faculty-developed competency examination to be administered in the capstone course and blindly reviewed by a faculty panel. Graduating seniors will score at least 70% on a departmental competency examination.

Description of Data Collection & Assessment Results:



Division of Student Life
ASSESSMENT REPORT

Use of Results to Improve Program:

Second Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success:

Description of Data Collection & Assessment Results:

Use of Results to Improve Program:

Health Education and Promotion
BS in Environmental Health

(Academic Department & Program)

August 2002 – May 2003

(Assessment Period Covered)

November 15, 2002

(Date Submitted)

Intended Educational Objective: Upon completion of the B.S.E.H. degree, graduates will have adequate background to continue studies in environmental health and safety.

First Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success: Survey of program graduates. Eighty percent of graduates who apply to graduate programs in environmental health or safety will gain admission.

Description of Data Collection & Assessment Results:



Division of Student Life
ASSESSMENT REPORT

Use of Results to Improve Program:

Second Means of Assessment for Objective Identified above:

Means of Assessment & Criteria for Success: Survey of program graduates. Of those responding to the survey, 80% of graduates attending graduate school will agree or strongly agree with the statement, "ECU's program adequately prepared me for graduate studies."

Description of Data Collection & Assessment Results:

Use of Results to Improve Program: