Deep South Education and Research Center for Occupational Safety and Health

Annual Report
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Submitted by:
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The Deep South Center for Occupational Health & Safety

UAB The University of Alabama at Birmingham & Auburn University

Deep South Education and Research Center
For Occupational Safety and Health

Table of Contents

Introduction and Executive Summary

The mission of the Deep South Occupational Health and Safety Education and Research Center is to develop professionals who protect and promote the health and safety of workers through interdisciplinary education, research, and outreach programs, and our goal is to be a center of excellence that promotes occupational safety and health through interdisciplinary education and research to serve the needs of Alabama, the Florida panhandle, Georgia, Mississippi and Tennessee. The Center is a consortium of programs at two of the major universities in Alabama: the University of Alabama at Birmingham (UAB) and Auburn University (AU). The Administrative Core is housed at the UAB School of Public Health. The core academic programs of the Center include Industrial Hygiene (IH) also at the UAB School of Public Health, Occupational Health Nursing (OHN) at the UAB School of Nursing, and Occupational Safety and Ergonomics (OSE) at the AU College of Engineering. The Center also incorporates two allied safety and health programs: Hazardous Substance Academic Training (HSAT) that is associated with the IH program, Occupational Injury Prevention Research Training (OIPRT) that is associated with the OSE program. The Continuing Education (CE) and Hazardous Substance Training (HST) are located in the UAB School of Public Health.

Center activities are coordinated through an Administrative Core consisting of the Center Director, Dr. Kent Oestenstad, the Deputy Director, Dr. Elizabeth Maples, support staff, an Executive Committee, and Board of Advisors. The Executive Committee includes the Center Director, all of the academic Program Directors, and the Diversity Recruiting Program Director and the CE / HST Program Director. The committee meets at least quarterly to review progress in meeting program goals, student progress, plan short-term Center activities, and conduct long-term strategic planning. The Board of Advisors includes representatives from all of the occupational safety and health disciplines, government agencies and labor unions, and all states in our region.

Major Accomplishments

A major accomplishment for the Center during the past year was the preparation and submission of a competing renewal application. The Center applied for support for all of the programs under the Administrative Core (Center Administration, Pilot Project Research Training, Diversity, Outreach, and Interdisciplinary Interaction), CE and HST programs, four academic programs (IH, OHN, OSE, and Agriculture Safety and Health), two supplemental academic programs (HSAT and OIPRT), and three NORA research projects (HCP, Nursing, and Signs). Funding was awarded for all of the Administrative Core programs, the CE and HST programs, three of the academic programs, both of the supplemental academic programs, and one of the NORA research programs. The Center was funded for five years with the IH/HSAT program being funded for three. The Agriculture Safety and Health program earned a very good priority score but was not funded because of administrative concerns at NIOSH. A supplemental application to address those concerns was submitted in September 2007. The many positive comments in the summary statement reflected the progress made during that project period; especially in the areas of establishing goals and objectives and interdisciplinary interaction.

Significant Changes

Significant changes in the Center were the addition of new faculty in the Occupational Health Nursing Program and naming Dr. Jerry Davis as the OIPRT program director. Drs. Arlene Johnson and Na-Jin Park were retained in the OHN program. Dr. Johnson's area of research interest is in sleep deprivation, performance and safety, and Dr. Park is interested in occupational stress and health risks. A new faculty member has been recruited by the OSE / OIPRT programs, and his appointment will begin in fall 2007.

ERC Web Site: uab.edu/dsc

A. Administrative Core Program Progress Report

B. Program Director: Riedar K. Oestenstad, PhD, CIH

C. Program Description

The Administrative Core consists of the Center Director, Dr. Kent Oestenstad, the Deputy Director, Dr. Elizabeth Maples, support staff, an Executive Committee, and Board of Advisors. The Executive Committee includes the Center Director, all of the academic Program Directors, the Minority Recruitment Program Director and CE/HST Program Director. The committee meets at least quarterly to review progress in meeting program goals, student progress, plan short-term Center activities, and conduct long-term strategic planning. The Board of Advisors includes representatives from all of the occupational safety and health disciplines, government agencies and labor unions, and all states in our region.

D. Program Activities and Accomplishments

The membership of the Board of Advisors has been expanded to include representatives from four of the states in our region, labor representatives, and individuals not previously associated with DSC programs. During the past year, the organization of the Board has been revised to make it more independent of the Executive Committee. This has included having the Board elect a chair to coordinate Board activities and conduct the annual Board meeting, and the annual meeting agenda has been changed to allow the Board to meet in executive session with DSC students, followed by the Chair's meeting with the Executive Committee to summarize the Board's observations and recommendations.

E. Program Products

The primary product of the Administrative Core during the past year was the preparation and submission of a competing renewal application of the ERC. The Center applied for support for all of the programs under the Administrative Core (Center Administration, Pilot Project Research Training, Diversity, Outreach, and Interdisciplinary Interaction), CE and HST programs, four academic programs (IH, OHN, OSE, and Agriculture Safety and Health), two supplemental academic programs (HSAT and OIPRT), and three NORA research projects (HCP, Nursing, and Signs). Funding was awarded for all of the Administrative Core programs, the CE and HST programs, three of the academic programs, both of the supplemental academic programs, and one of the NORA research programs. The Center was funded for five years with the IH/HSAT program being funded for three. The Agriculture Safety and Health program earned a very good priority score but was not funded because of administrative concerns. A supplemental application to address those concerns was submitted in the 2007 funding cycle.

F. Future Plans

The Executive Committee in consultation with the Board of Advisors will continue to review progress on goals and objectives for the Center, and make necessary revisions as conditions dictate.

A. Diversity Recruitment Program Progress Report

B. Program Director: Melissa Norman, DrPH

C. Program Description

The Deep South Center (DSC) serves a region of the United States that is rich in racial and cultural diversity. Unfortunately, more so than in other parts of the country, minority students in this region have had to overcome many obstacles to obtain quality undergraduate and graduate education that lead to professional careers. The goal of the Center has been to maintain minority enrollment in our academic programs at the same or greater percentage as the corresponding percentage in the population of our region.

D. Program Activities and Accomplishments

According to U.S. Census Bureau population estimates for 2005, the percentage of African-Americans residing in Alabama, Mississippi, Georgia and Tennessee is about 26%, and the percentage of Hispanics is about 4%. Efforts to recruit trainees from these underrepresented groups have included identifying and encouraging undergraduates currently enrolled at the University of Alabama (UA), the University of Alabama at Birmingham (UAB), and Auburn University (AU) through Black Student Awareness Organizations, direct liaison with the BellSouth Minority Engineering program, introducing high school students and undergraduate students to careers in occupational safety and health through participation in E-Day activities during Engineers week. In addition, we have conducted seminars and other recruitment activities at Historically Black Colleges and Universities (HBCUs) within the region. Our past efforts to promote racial and ethnic diversity has resulted in 50% minority representation in the Occupational Health Nursing (OHN) program, 42% in the Occupational Safety and Ergonomics (OSE) Program, and 33% in the Industrial Hygiene (IH) program. The Continuing Education (CE) program promotes minority attendance at by providing information on training opportunities to minority and women-owned businesses, and forwarding information CE course offerings to a listing of minority-owned newspapers and radio stations in our region. As a result of these efforts, 23.4% of attendees at CE offerings during the past year have been from minority groups. The retention of minority faculty has also been promoted by the ERC: recently an African-American female has joined the IH faculty, and an African-American female and an Asian-American female have joined the OHN faculty.

E. Program Products

None to report.

F. Future Plans

Center plans to promote the recruitment of minority students by developing comprehensive, collaborative relationships with student advisors and counselors within HBCUs in the states of Alabama, Mississippi, Georgia, Tennessee and the Florida panhandle. This process will utilize the existing network of HBCUs in the National Science Foundation funded Louis Stokes Alliances for Minority Participation (LSAMP) Program in these states. A Center representative will contact the designated LSAMP representatives at identified HBCUs to provide information on ERC programs, arrange seminar presentations, and attend their annual "career and graduate school days". Also, students and faculty from LSAMP institutions will be invited to attend our annual interdisciplinary research seminar. To promote research collaboration, the Center will identify HBCU faculty members who have occupational safety and health-related research interests, and include them on the announcement distribution list for pilot project request for proposals. Another component of our Diversity Recruitment Plan is to invite qualified undergraduate students from LSAMP institutions in our region to attend our annual Undergraduate Occupational Safety and Health Summer Institute.

A. Outreach Program Progress Report

B. Program Director: Elizabeth H. Maples, PhD

C. Program Description

The Deep South Center (DSC) has an impressive record of outreach activities to other academic institutions, practicing professionals, companies and governmental agencies. The entire Center faculty participates in individual and programmatic outreach activities, which are coordinated and tracked by Dr. Maples. These include outreach activities to other academic institutions, practicing professionals, companies and governmental agencies

D. Program Activities and Accomplishments

All of the Center's programs have been involved in educational development, presentations, lectures, seminars, consultations and other activities. The OHN program provides students and faculty in the UAB School of Nursing with clinical and research experiences and content related to occupational health and encourages them to pursue educational, career, and research opportunities in OHN. The OHN program continues to provide OHN services to through the Good Health Program and City of Birmingham Clinic. In addition to numerous consultations to industry, academic institutions, municipalities and federal government agencies, and medical and research facilities, OSE faculty reach graduate and undergraduate non-OSE students by offering the OSHA 10-Hour General Industry Course, and a distance-learning course titled "An Introduction to Systems Safety for Engineers." The IH faculty present seminars on IH careers, and Dr. Oestenstad is the session arranger for the annual Graduate Student Poster Session at the American Industrial Hygiene Conference. Of special note are the various Center activities to promote health and safety among the growing Hispanic and Latino workforce. Dr. Maples serves on the planning committee for the annual Alabama Governor's Safety Conference and the Public Employees Safety Council of Alabama.

E. Program Products

Dr. Maples, with the assistance of Dr. Norman, developed a video on giving instructions in both Spanish and English to Spanish-speaking workers on spirometry and audiometric testing procedures.

F. Future Plans

The Center plans to develop and offer a web-based ergonomics certificate program for non-occupational safety and health professionals, in addition to maintaining established outreach to the practicing occupational safety and health community. We will continue to promote an outreach program to provide information on workplace violence for the Healthcare and Social Assistance NORA sector. A new, innovative planned outreach activity will be the Center's Summer Occupational Health and Safety Institute for incoming senior undergraduate students in science, engineering, nursing, and pre-health programs. The goal the Institute is to introduce these students to the scientific principles and practice of the occupational safety and health and familiarize them with career opportunities in these professions.

A. Interdisciplinary Interaction Program Progress Report

B. Program Director: Riedar K. Oestenstad, PhD, CIH

C. Program Description

Center interdisciplinary activities are coordinated through an Administrative Core, under the direction of the Center Director, Dr. Oestenstad. All of the core and allied academic Program Directors as well as the CE Program Director are involved in interdisciplinary activities. At each quarterly Executive Committee meeting, program goals, student progress, short-term Center activities and interdisciplinary activities are reviewed. The Center's Board of Advisors has an interdisciplinary composition with representatives from all of the occupational safety and health core disciplines and individuals from industry, academia, government agencies and labor. Our ERC has developed partnerships with other academic institutions, businesses, professional organizations, and governmental agencies in our region for the purpose of disseminating information about the occupational safety and health disciplines, research and research to practice, all of which add to the interdisciplinary experiences for the students.

D. Program Activities and Accomplishments

The primary methods of achieving interdisciplinary interaction among students in Center programs include courses common to all academic programs, workplace evaluation field trips, seminars, research projects, and clinical activities. Interdisciplinary experiences are also available through the CE Program. Students in all of the ERC academic programs enroll in ENH 621 Fundamentals of Industrial Hygiene taught by faculty in the Industrial Hygiene faculty (IH), and IH and Occupational Health Nursing (OHN) students take ENH 670 Fundamentals of Occupational Safety and Ergonomics taught by faculty in the Occupational Safety and Ergonomics (OSE) program. Additionally, all ERC students are required to enroll in ENH 680 Field Interdisciplinary Studies and ENH 681 Interdisciplinary Worksite Evaluations taught by faculty from all of the ERC programs. The highlight interdisciplinary coursework are the two worksite evaluation courses: ENH 680 - Interdisciplinary Field Studies that is offered every fall semester, and ENH 681 – Interdisciplinary Worksite Evaluations that is offered every spring semester. In these courses students are required to work in interdisciplinary teams to evaluate a real-world safety and health problem and propose methods to reduce or eliminate the hazards. In ENH 681 students are assigned to interdisciplinary teams for the purpose of conducting independent evaluations at designated worksites with the goal of solving real-world occupational health problems. The teams interact with the site managers/preceptors and develop reports that describe the problem, cite the applicable standards and regulations, and recommend control methods. These reports are presented to the entire class and faculty in a course-concluding seminar. After a review by the course master and the other course faculty, the reports are presented to the safety and health managers at the sites where the evaluations were conducted. Each student enrolling in ENH 681 is also required to participate in 45 hours of documented interdisciplinary activities in and outside the course, and includes a four hour occupational health clinic rotation by IH students at the City of Birmingham Occupational Health Clinic, and OSE students at the Hughston Clinic in Auburn, AL.

E. Program Products

The products of this program are the team project reports from ENH 681 that are submitted to the safety and health managers at the sites where the evaluations were conducted.

F. Future Plans

We plan to continue these activities and to work with the Board of Advisors to develop other new and innovative interdisciplinary opportunities.

A. Pilot Project Research Training Program Progress Report

B. Program Director: Edward Postlethwait, PhD

C. Program Description
Although we did not have a Pilot Project Research Training Program (PPRT) this budget period, the Center applied for this program in the competing renewal application. That application was funded, and requests for proposals will be sent out after July 1, 2007.

D. Program Activities and Accomplishments
None to report

E. Program Products
None to report

F. Future Plans
The new PPRT is intended to promote and expand the research training mission of the ERC by supporting pilot or small research projects that emphasize the National Occupational Research Agenda. The program includes procedures for soliciting applications, a review mechanism that includes an external scientific review board, funding processes, reporting requirements, and reporting and follow up requirements.

A. NORA Research Support Program Progress Report

B. Program Director: Riedar K. Oestenstad, PhD, CIH

C. Program Description

The purpose of the NORA program was to provide stipends and tuition support for doctoral students in the ERC, provide salary support for faculty that were teaching courses with substantial content related to NORA topics, and provide support for students and faculty to attend conferences and seminars on NORA related subjects.

D. Program Activities and Accomplishments

The annual Deep South Center NORA Research Day, attended by all ERC students, highlights the research activities of students in each of the ERC academic programs. After each presentation, time is allowed for an open discussion on the research topic, findings, and application to the field of occupational health and safety. In addition to student presentations, the Center has also been fortunate to have highly regarded occupational health and safety professionals give presentations at two Research Days. Though the use of the Alabama Intercampus Interactive Telecommunications System (IITS), students at UAB and Auburn have also participated in joint journal clubs on NORA-related topics.

E. Program Products

None to report.

F. Future Plans

Three applications for NORA research projects were submitted in the competing renewal application. They included a proposal to design, create, implement and evaluate a means of communicating basic construction safety principles to workers regardless of language spoken, literacy or level of educational attainment; a proposal to develop a evaluation method for a hearing conservation program in a large mining company; and to conduct a randomized, controlled clinical trial to test the effectiveness of an integrated managed preventive care intervention for an employee population. The managed care preventive care intervention proposal was funded, and work will proceed over the next three years.

A. Industrial Hygiene Program Progress Report

B. Program Director: Claudiu T. Lungu, PhD

C. Program Description

The primary goal of the Industrial Hygiene (IH) component of the Deep South Center (DSC) is to prepare industrial hygiene professionals who will be leaders in the field and active promoters of occupational health and safety practice. The IH program provides students with a comprehensive curriculum that combines the theoretical and applied aspects of IH that will prepare them to excel in the practice of IH and /or conduct reseach to advance the field and protect the health and safety of workers. Since its inception in 1982, the IH program has graduated 271 masters and doctoral students, almost 66% of whom are still practicing some aspect of IH in the southeast, thus making the program a valuable resource in meeting the IH professional needs of this region. As one of the core academic programs of the DSC, the IH program offers the MPH, MPHA, DrPH, and PhD degrees.

Master's students are prepared for the profesional degree through course work, are challenged with a research project, and a summer internship that provides practical application of learned skills in the workplace. The objective of the doctoral research-training program is to prepare students for careers in IH research. Graduates are particularly qualified for teaching or research positions in academic institutions, research laboratories, or government institutions.

Claudiu T. Lungu, Ph.D., became the IH program director in June 2005 when he was hired as a tenure track assistant professor in industrial hygiene and has continued his activity as a program director during the 2006-2007 academic year. Dr. Lungu is assisted in the management of the program by the Center's Director, Dr. Oestenstad, and the other IH faculty in the program, Drs. Maples and Norman and the Department's Program Coordinator, Cherie Hunt. Program Faculty is listed in the following table.

FACULTY	SPECIALTY AREA
Claudiu T. Lungu, MS, PhD	Respiratory Protection, Vapor Exposures, Radiation Physics
R. Kent Oestenstad, PhD, CIH	Aerosols, Respiratory Protection, Noise, and Exposure Evaluation
Melissa Norman, DrPH	Noise Exposure, Hearing Loss, Multiple Exposures
Elizabeth H. Maples, PhD	Program Evaluation, Training Evaluation, Noise Induced Hearing Loss Prevention
Michael Ridge, BS, CIH	Ventilation Controls and PPE
Allen Williams, MSPH, CIH, CSP	IH Practice
Todd Hogue, CIH, CSP	Occupational Health & Safety Management
Max Richard, MPH	Health Physics
Mike Mueller, MD, MPH	Occupational Diseases
Judith McBride, MSPH, CIH	Physical Agents, Lab. Safety Management
Ed Postlethwait, PhD	Toxicology
Rob Thomas, PhD, PE, CPE	Occupational Safety and Ergonomics
Kathleen Brown, PhD	Occupational Health

Dr. Lungu has already been successful in being awarded an R01, contributes to the research training of doctoral students, and as a result of excellent previous experience in another ERC, is a strong member of the ERC Executive Committee.

The IH faculty has strived to maintain a comprehensive and relevant MPH curriculum while meeting the requirements of NIOSH and the Council on Education in Public Health (CEPH). An important aspect of this process has been to solicit input from our alumni concerning the adequacy of our curriculum in preparing them for the practice of industrial hygiene. The curriculum is reviewed annually by the IH faculty in consultation with adjunct instructors. These reviews will continue during this project period with an emphasis on the concerns raised by the reviewers. We have been aware of the heavy course load in the IH curriculum and have taken steps to reduce the number of required courses. These have included combining two courses into a single course, eliminating some required courses, changing the research requirement in the MPH curricula from a formal thesis to a research project thus reducing the research hours from nine to five, and increasing the electives to six credit hours. However, these reductions have been to a degree offset by the CEPH requirement that IH students take the 19 hours of the School of Public Health Core Curriculum. Even with these additions, we have reduced the requirement for the two-year MPH from 65 to 58 credit hours and to allow two electives. We also offer a rigorous one-year accelerated MPH for students who graduate from undergraduate IH programs that requires 43 semester hours to complete.

The IH program offers a DrPH in Occupational Health and Safety, and a PhD in Environmental Health Science. In 2000 the PhD degree in Environmental Health Sciences was effectively closed to students interested in IH by virtue of extensive molecular toxicology requirements. However, due to a change in the chair of the department and a reappraisal of the PhD curriculum, the department has developed a PhD degree with three foci: environmental toxicology, environmental policy and industrial hygiene. This curriculum was approved by the School of Public Health Education Policy Committee and went into effect in the spring semester of 2006, and we currently have two IH students enrolled in the PhD program.

See Appendix A for sample plans of studies for these degrees.

D. Program Activities and Accomplishments

- Progress toward Goals:
  - During the 2006-2007 academic year the IH program exceeded our annual goal of 5 enrolled students with 1 MPH, 2 Ph.D., 3 full-time DrPH and 4 part-time DrPH students enrolled in the fall semester 2006.
  - Over a period of two years of enrollment 100% of master's and doctoral students participated in four semesters of interdisciplinary activity (ENH 680 and ENH 681).
  - Within six months of graduation, 100% of our masters students were employed in positions appropriate to their training, and after two years post-graduation, 90% indicated that the program prepared them well for work as an IH, and 100% indicated significant interdisciplinary interaction in their jobs.
  - All of our doctoral graduates are employed in research, academic, or advanced administrative positions. After two years post-graduation, 100% of our doctoral graduates indicated that the program prepared them well for their positions.
  - All of the faculty have received better than satisfactory course evaluations (satisfactory is the goal).
  - They have also been active in the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists as committee chairs, session arrangers and journal reviewers.
- Trainee honors:
- Faculty honors:
  - Dr. Norman was induced into the Delta Omega, Public Health Honors Society
  - Dr. R. Kent Oestenstad, has been selected to serve on an Institute of Medicine Task Force: Personal Protective Equipment for Healthcare Workers During an Influenza Pandemic

- Dr. Lungu was elected Chair of the Ionizing Radiation Committee of the American Industrial Hygiene Association

- Trainee thesis and dissertations:
  - Rebecca Davis – Evaluating the Effectiveness of In-House Hazard Communication Training in an Industrial Manufacturing Setting.
  - Katrina Wright - Contribution of Non-occupational Exposure Factors and Non-noise Occupational Exposure to Loss of Hearing Sensitivity among Anniston Army Depot Workers. (DrPH dissertation)
  - Mark Brooks – Predictors of Indoor Dust and Cockroach Levels (DrPH dissertation)
- New faculty positions: NA
- New courses: NA
- Trainee recruitment: The IH Program conducted recruiting visits to the Jackson State University, Alcorn State University and the University of Louisiana at Monroe during the past year. Past efforts of the IH program to promote racial and ethnic diversity has resulted in 33% minority enrollment in our degree programs. To maintain and increase this percentage, we have made contact with Historically Black Colleges and Universities (HBCUs) in our region. We have scheduled seminar presentations at Alabama State University.

E. Program Products

Publications and presentations:

Lungu, C. and J. Goot-Balanay: Assessment of Volatile Organic Compounds Exposure of Jeepney Drivers in Manila, Philippines, *Journal of Occupational and Environmental Hygiene*, Accepted with revisions.

Elliott, L. and R.K.Oestenstad: Evaluation of the Predictive Abilities of a Qualitative Exposure Assessment Model, *Journal of Occupational and Environmental Hygiene*. 4:440-447 (2006).

Oestenstad, R.K., L. Elliott, and T.M.Beasley: The Effect of Gender and Respirator Brand on the Association of Respirator Fit with Facial Dimensions, *Journal of Occupational and Environmental Hygiene*. (Accepted)

Oestenstad, R.K., E.H. Maples, and C. McCullum-Hill: An Assessment of the Practice of the Ten Essential Services and the Perceived Abilities in the Fourteen Core Competencies of Environmental Public Health Practitioners in Alabama, *Journal of Environmental Health* (submitted)

Oestenstad, R.K., M.W. Norman, and T.M. Borton: Efficacy of the U.S. Army Policy on Hearing Conservation Programs, *Military Medicine* (submitted)

Lungu C., S. Crawford and D. Bocard: Estimate of Exposure to Styrene Emitted from Thermoset Composite Materials using a Small Environmental Test Chamber. American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007.

Bocard, D. S. Crawford, C. McDaniel, C. Lungu: Modeling Styrene Concentration Profile Emitted from Vinyl Ester Resin. American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007 (poster).

Lungu, C. and Crawford, S.: Laboratory Determination of Styrene Emission from Thermoset Composite Materials. Second International Conference on Environment – The Athens Institute for Education and Research (AT.IN.E.R.), Athens, Greece, August 2007.

Sturchio, G. and C. Lungu: Exposure Assessment of Radioiodine Therapy Patients – Implication for Patient Release. International Radiation Protection Association (IRPA) Regional Congress for Central and Eastern Europe, Brasov, Romania, September 2007.

Oestenstad, R.K., Maples, E.H.: Training the Occupational Safety and Health Professional of the Future, Alabama Governor's Safety and Health Conference, Orange Beach, AL, August 2006.

Davis, R. and E.H. Maples: Evaluating the Effectiveness of In-House Hazard Communication Training in an Industrial Manufacturing Setting American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007 (poster).

F. Future Plans

- We plan to continue active recruiting activities to maintain the level of enrollment and diversity in the IH Program. A competing renewal application has been submitted for the IH Program for the 2007 – 2012 project periods.
- Continue active participation in interdisciplinary activities with students from other core disciplines: interact in teams, recognize the contributions and perspectives of each discipline, and are involved in focused ERC team activities and projects.
- Submission of new research proposals to bring funds for future research projects.

Appendix

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UAB INDUSTRIAL HYGIENE PROGRAM

Required Outline of Study Academic Year 2006-07

MPH-B

FIRST YEAR				
Fall	ENH621	Fundamentals of Industrial Hygiene	3	
	ENH650	Environmental and Occupational Toxicology & Diseases	5	
	ENH661	Air Sampling and Analysis	3	
	ENH662	Air Sampling and Analysis Lab	1	
	BST 611	Biostatistics	3	
	ENH680	Field Interdisciplinary Studies	1	
	ENH691	IH Program Seminar	1	17
Spring	ENH624	Control of Occupational Hazards	3	
	ENH625	Industrial Hygiene Case Studies	3	
	ENH626	Physical Agents	2	
	ENH670	Fundamentals of Occupational Safety and Ergonomics	3	
	BST 612	Biostatistics	3	
	EPI 600	Epidemiology	3	15
Summer	ENH697	Preceptorship in Environmental Health	3	3
SECOND YEAR				
Fall				
	ENH600	Environmental Health Science	3	
	ENH680	Field Interdisciplinary Studies	1	
	XXX	Elective	3	
	ENH699	Master's Level Project Research	2	
	ENH691	IH Program Seminar	1	
				10
Spring	HCO690	Health Care Organization and Policy	3	
	HB 600	Health Behavior	3	
	ENH681	Interdisciplinary Worksite Evaluations	1	
	ENH699	Master's Level Project Research	3	
		Elective	3	13

Didactic	48
Project Research	5
Internship	3
Seminar	2
TOTAL HOURS:	58

Recommended Electives	
ENH603	Management of Occupational Health and Safety
ENH610	Environmental Health Disasters
ENH651	Risk Assessment of Environmental Hazards
EPI 610	Principles of Epidemiologic Research
EPI 616	Environmental Epidemiology
EPI 617	Occupational Epidemiology
HCO607	Public Health Law

UAB INDUSTRIAL HYGIENE PROGRAM

Required Outline of Study Academic Year 2006-07

MPH *(One Year Accelerated)*

This new degree track is specifically designed for graduates of undergraduate IH programs financially supported by the National Institute for Occupational Safety and Health (NIOSH).

Fall	ENH650	Environmental and Occupational Toxicology & Diseases	5
	ENH 680	Field Interdisciplinary Studies	1
	ENH 600	Environmental Health Sciences	3
	BST 611	Biostatistics	3
	EPI 600	Epidemiology	3
	ENH699	Master's Level Project Research	2
	ENH691	IH Program Seminar	1
Spring	ENH625	Industrial Hygiene Case Studies	3
	ENH 681	Interdisciplinary Worksite Evaluations	1
	BST 612	Biostatistics	3
	HB 600	Health Behavior	3
	HCO 690	Health Care Organization and Policy	3
	ENH699	Master's Level Project Research	3
		Elective	3
Summer	ENH697	Preceptorship in Environmental Health	6
		Didactic	31
		Project Research	5
		Internship	6
		Seminar	1
		TOTAL HOURS:	43

Recommended Electives

ENH 603	Management of Occupational Health and Safety
ENH 610	Environmental Health Disasters
ENH651	Risk Assessment of Environmental Hazards
EPI 610	Principles of Epidemiologic Research
EPI 616	Environmental Epidemiology
EPI 617	Occupational Epidemiology
HCO 607	Public Health Law
IH 610	Environmental Hygiene in Developing Countries

Sample Course of Study for a Full-Time Student in the PhD Program in Environmental Health Sciences with an Emphasis in Industrial Hygiene

Curriculum: PhD students are expected to complete the department core course requirements, as well as those courses required for their foci and are necessary to prepare them to conduct their dissertation research. Other courses preparatory to dissertation research will be determined by the student in consultation with his/her academic advisor.

Note that although GRD 717 is required, this course will not be considered in the total credit hours required for the degree.

Fall Semester Year 1	Credit Hrs
ENH 700 Scientific Basis of Environmental Health	3
ENH 721/TOX 711 Principles of Toxicology	3
ENH 790 Current Topics in Environmental Health Sciences Research	1
ENH 791 Advanced Environmental Health & Toxicology Seminar	1
ENH 796 Environmental Health Sciences Laboratory Research	3
Elective At least one elective at the discretion of Student and Mentor	3
EPI 616 Environmental Epidemiology recommended	
Spring Semester Year 1	
ENH 701 Environmental Chemistry	3
ENH 722/ TOX 712 Actions and Assessment of Toxicants	3
ENH 790 Current Topics in Environmental Health Sciences Research	1
ENH 791 Advanced Environmental Health & Toxicology Seminar	1
ENH 796 Environmental Health Sciences Laboratory Research	3
Elective At least one elective at the discretion of Student and Mentor	3
EPI 617 Occupational Epidemiology recommended	
Summer Semester Year 1	
ENH 796 Environmental Health Sciences Laboratory Research	3
GRD 717 Principles of Scientific Integrity	3
(Can be taken at a later date, required for graduation)	
Total (first year)	34

By mid-summer of the first year, the student selects a dissertation advisor (mentor)

Fall Semester Year 2	
ENH 790 Current Topics in Environmental Health Sciences Research	1
ENH 791 Advanced Environmental Health & Toxicology Seminar	1
ENH 796 Environmental Health Sciences Laboratory Research	6
BST 611 Intermediate Statistical Analysis I	3
Elective At least one elective at the discretion of Student and Mentor	3
Spring Semester Year 2	
ENH 710 Grant Proposal Writing in Biomedical Sciences	1
ENH 790 Current Topics in Environmental Health Sciences Research	1
ENH 791 Advanced Environmental Health & Toxicology Seminar	1
ENH 796 Environmental Health Sciences Laboratory Research	6

BST 612	Intermediate Statistical Analysis II	3
Elective	At least one elective at the discretion of Student and Mentor	3
	ENH 770 (Advanced Topics in Environmental Disasters and Public Health recommended)	

Summer Semester Year 2

ENH 723/ TOX 713	Advanced Topics in Toxicology	3
ENH 798/799	Doctoral-Level Directed Research/Dissertation Research	3
	Total (second year)	34

Note: Students must register for a journal club each semester starting the second year. Suggested journal clubs are those administered through the Department of Pathology or Pharmacology/Toxicology.

Note: For the elective, one semester of epidemiology is strongly suggested. These courses may be taken either before or after the comprehensive exam.

Note: Student selects members to serve on dissertation committee and must have introductory (first) dissertation committee meeting within the Fall or Spring Semesters of their second year

Note: ENH 798 (Doctoral Level Directed Research) requires passing the Comprehensive Exam, whereas, ENH 799 (Dissertation Research) requires both passing the Comprehensive Exam and Admission to Candidacy. The Comprehensive Qualifying Examination must be passed by the Summer Semester of the Second Year (Admission to Candidacy)

Third/Forth/Fifth Years

The following courses should be taken each term until graduation (ENH 790 and ENH 791 are offered in the Fall and Spring semesters).

ENH 790	Current Topics in Environmental Health Sciences Research	1
ENH 791	Advanced Environmental Health & Toxicology Seminar	1
ENH 799	Dissertation Research	6-9

Note: Students must register for a journal club or seminar series each semester.

Sample Course of Study for a Full-Time Student in the DrPH Program in Environmental Health Sciences with an Emphasis in Occupational Health and Safety

	YEAR ONE (credit hours in parentheses)
Fall Semester	ENH 650, Environmental and Occupational Toxicology and Diseases (5) ENH 680, Interdisciplinary Field Studies (1) ENH 691, Industrial Hygiene Seminar (1) ENH 700, Scientific Basis of Environmental Health (3) BST 611, Intermediate Statistical Analysis I (3) At least one elective at the discretion of student and mentor (3) Total 16
Spring Semester	ENH 681, Interdisciplinary Work Site Evaluations (2) ENH 691, Industrial Hygiene Seminar ENH 770, Advanced Topics in Environmental Disasters and Public Health (3) BST 612, Intermediate Statistical Analysis II (3) At least two electives at the discretion of student and mentor (6) Total 14
Summer Semester	GRD 717, Principles of Scientific Integrity (can be taken at a later date, required for graduation (3). Or HCO 670 Social and Ethical Issues (offered Fall and Spring) May also take electives if available. ***** By Mid-Summer of the First Year:** **STUDENT SELECTS DISSERTATION ADVISOR (MENTOR)*****
	YEAR TWO
Fall Semester	ENH 680, Interdisciplinary Field Studies (1) ENH 691, Industrial Hygiene Seminar (1) ENH 790, Current Topics in Environmental Health Sciences Research (1) ENH 798, Doctoral Level Directed Research (3 minimum) At least two electives at the discretion of student and mentor (6) Total 12
Spring Semester	ENH 681, Interdisciplinary Work Site Evaluations (2) ENH 691, Industrial Hygiene Seminar ENH 710, Grant Proposal Writing in Biomedical Sciences (1) ENH 790, Current Topics in Environmental Health Sciences Research (1) ENH 798, Doctoral Level Directed Research (3 minimum) EPI 610, Principals of Epidemiologic Research & Lab (4) At least one elective at the discretion of student and mentor (3) Total 14
Summer Semester	ENH 798, Doctoral Level Directed Research (3 minimum) *****Fall/Spring of Second Year: STUDENT HAS INTRODUCTORY (FIRST) DISSERTATION COMMITTEE MEETING*****
	YEAR THREE ***** Comprehensive Qualifying Examination** **STUDENT PASSES** **QUALIFYING EXAM BY THE END OF SUMMER SEMESTER OF THE SECOND YEAR (ADMISSION TO CANDIDACY) *****

	The Following Courses Should be Taken each Term Until Graduation
	ENH 680, Interdisciplinary Field Studies – Fall Semesters (1) ENH 681, Interdisciplinary Work Site Evaluations – Spring Semesters (2) ENH 799, Doctoral Research (requires admission to Candidacy) – Must take at least 2 semesters (6 hrs) before graduating. ENH 790, Current Topics in Environmental Health Sciences Research every semester to graduation.
	*****Continue with the This Model Until** STUDENT WRITES AND DEFENDS DISSERTATION*** NOTE: Students must register for a journal club relevant to their area of study each fall and spring semesters starting in their third year. Students are encouraged to enroll in journal clubs during their second year. Suggested journal clubs are those recommended by the student's mentor and dissertation committee.

**The student in consultation with their advisory committee will select electives that are relevant to their area of interest and are preparatory to their dissertation research.

A. Hazardous Substances Academic Training Program Progress Report

B. Program Director: Claudiu Lungu, PhD

C. Program Description

The primary goal of the Hazardous Substances Academic Program (HSAT) of the Deep South Center is to prepare graduate level industrial hygienists with specialization in the industrial hygiene (IH) aspects of handling hazardous substances. The HSAT Program is a component of the IH Program of the Center. Since the inception of the HSAT program in July 1996, 19 students have graduated with a Master of Science in Public Health (MSPH) or MPH degree. Claudiu T. Lungu, Ph.D. is the IH and HSAT programs director. The core faculty in the HSAT Program and their specialty areas are listed in the following table:

FACULTY	SPECIALTY AREA
Claudiu T. Lungu, PhD	Respiratory protection, exposure to vapor, radiation.
R. Kent Oestenstad, PhD, CIH,	Aerosols, respiratory protection and exposure evaluation
Elizabeth H. Maples, PhD	Program evaluation, training evaluation, noise exposure
Melissa Norman, DrPH	Noise exposure, hearing loss, multiple exposures
Giuseppe Squadrito, PhD	Environmental chemistry
Michael Ridge, CIH	Ventilation controls and PPE
Allen Williams, MSPH, CIH, CSP	IH practice
Judith McBride, MSPH, CIH	Physical agents, lab. safety management
Todd Hogue, MSPH, CIH, CSP	Occupational health management
Max Richard, MPH	Health physics

Dr. Lungu has been successful in being awarded an R01, contributes to the research training of doctoral students, and as a result of excellent previous experience in another ERC, is a strong member of the ERC Executive Committee.

Positive adjustments have been made in the curriculum to provide more electives and prepare students for IH roles of the future. HSAT students have the opportunity to take another elective besides the HSAT required classes: ENH 601 - Environmental Chemistry, ENH - 602 Environmental Management, and ENH 622 - IH Applications for Hazardous Substances. Required credit hours were reduced by changing ENH 661 - Air Sampling and Analysis from four hours to three hours to eliminate overlap with ENH 621 -Fundamentals of Industrial Hygiene. ENH - 626 Physical Agents was reduced from three semester hours to two hours by omitting discussion of pressure extremes and tightening the presentations of other material. The following three semester hour environmental health courses were changed from required courses to electives: ENH 651 - Risk Assessment of Environmental Hazards, and ENH - 660 Fundamentals of Air and Water Pollution. Also a new course, ENH 603 - Management of Occupational Health and Safety was added as an elective. This course will be strongly recommended to all IH/HSAT masters students. Another change that has occurred during this academic year was the requirement for a research project rather than a masters thesis for IH/HSAT students. A research paper having the same content requirements as a thesis became the venue to fulfill the master level project research requirement. Besides a research paper that will describe original, field or laboratory research students can choose another option such as a review paper on a relevant IH/HSAT topic, a study design project aimed to investigate certain health exposures or outcomes, an original web or video based educational material for occupational health and safety, an occupational health plan for implementation of occupational health practices or controls, as well as other materials that are considered relevant by the research mentor. See Appendix A for a sample plan of studies.

D. Program Activities and Accomplishments

- Progress toward Goals: During the 2006-2007 academic year the HSAT program met our annual goal with 3 enrolled masters students, and three new HSAT students have enrolled in the fall semester 2007.
- Trainee honors:
- Faculty honors:
    - Dr. Norman was induced into the Delta Omega, Public Health Honors Society
    - Dr. R. Kent Oestenstad, has been selected to serve on an Institute of Medicine Task Force: Personal Protective Equipment for Healthcare Workers During an Influenza Pandemic
    - Dr. Lungu was elected Chair of the Ionizing Radiation Committee of the American Industrial Hygiene Association
- Trainee thesis and dissertations:
    - Derek Bocard - Modeling Styrene Concentration Profile Emitted from Vinyl Ester Resin.
- New faculty positions:
- New courses:
- Trainee recruitment: The HSAT Program conducted recruiting visits to the, Jackson State University, Alcorn State University and the University of Louisiana at Monroe during the past year. Past efforts of the HSAT program to promote racial and ethnic diversity has resulted in 33% minority enrollment in our degree programs. To maintain and increase this percentage, we have made contact with Historically Black Colleges and Universities (HBCUs) in our region.

E. Program Products

Publications and presentations:

Lungu, C. and J. Goot-Balanay: Assessment of Volatile Organic Compounds Exposure of Jeepney Drivers in Manila, Philippines, *Journal of Occupational and Environmental Hygiene*, Accepted with revisions.

Elliott, L. and R.K.Oestenstad: Evaluation of the Predictive Abilities of a Qualitative Exposure Assessment Model, *Journal of Occupational and Environmental Hygiene*. 4:440-447 (2006).

Oestenstad, R.K., L. Elliott, and T.M.Beasley: The Effect of Gender and Respirator Brand on the Association of Respirator Fit with Facial Dimensions, *Journal of Occupational and Environmental Hygiene*. (Accepted)

Oestenstad, R.K., E.H. Maples, and C. McCullum-Hill: An Assessment of the Practice of the Ten Essential Services and the Perceived Abilities in the Fourteen Core Competencies of Environmental Public Health Practitioners in Alabama, *Journal of Environmental Health* (submitted)

Oestenstad, R.K., M.W. Norman, and T.M. Borton: Efficacy of the U.S. Army Policy on Hearing Conservation Programs, *Military Medicine* (submitted)

Lungu C., S. Crawford and D. Bocard: Estimate of Exposure to Styrene Emitted from Thermoset Composite Materials using a Small Environmental Test Chamber. American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007.

Bocard, D. S. Crawford, C. McDaniel, C. Lungu: Modeling Styrene Concentration Profile Emitted from Vinyl Ester Resin. American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007 (poster).

Lungu, C. and Crawford, S.: Laboratory Determination of Styrene Emission from Thermoset Composite Materials. Second International Conference on Environment – The Athens Institute for Education and Research (AT.IN.E.R.), Athens, Greece, August 2007.

Sturchio, G. and C. Lungu: Exposure Assessment of Radioiodine Therapy Patients – Implication for Patient Release. International Radiation Protection Association (IRPA) Regional Congress for Central and Eastern Europe, Brasov, Romania, September 2007.

Oestenstad, R.K., Maples, E.H.: Training the Occupational Safety and Health Professional of the Future, Alabama Governor's Safety and Health Conference, Orange Beach, AL, August 2006.

Davis, R. and E.H. Maple, E.H.: Evaluating the Effectiveness of In-House Hazard Communication Training in an Industrial Manufacturing Setting American Industrial Hygiene Conference and Exposition, Philadelphia, PA, June 2007 (poster).

A. Future Plans

- We plan to continue active recruiting activities to maintain the level of enrollment and diversity in the HSAT Program.
- Continue active participation in interdisciplinary activities with students from other core disciplines: interact in teams, recognize the contributions and perspectives of each discipline, and are involved in focused ERC team activities and projects.

Appendix

UAB INDUSTRIAL HYGIENE PROGRAM - HSAT

Required Outline of Study Academic Year 2006-07

FIRST YEAR				
Fall	ENH621	Fundamentals of Industrial Hygiene	3	
	ENH650	Environmental and Occupational Toxicology & Diseases	5	
	ENH661	Air Sampling and Analysis	3	
	ENH662	Air Sampling and Analysis Lab	1	
	BST 611	Biostatistics	3	
	ENH680	Field Interdisciplinary Studies	1	
	ENH691	IH Program Seminar	1	17
Spring	ENH624	Control of Occupational Hazards	3	
	ENH625	Industrial Hygiene Case Studies	3	
	ENH626	Physical Agents	2	
	ENH670	Fundamentals of Occupational Safety and Ergonomics	3	
	BST 612	Biostatistics	3	
	ENH681	Interdisciplinary Worksite Evaluations	1	15
Summer	ENH697	Preceptorship in Environmental Health	3	3
SECOND YEAR				
Fall	EPI 600	Epidemiology	3	
	ENH600	Environmental Health Science	3	
	ENH 680	Field Interdisciplinary Studies	1	
		2 Electives	6	
	ENH699	Master's Level Project Research	2	
	ENH691	IH Program Seminar	1	16
Spring	HCO690	Health Care Organization and Policy	3	
	HB 600	Health Behavior	3	
	ENH681	Interdisciplinary Worksite Evaluations	1	
	ENH699	Master's Level Project Research	3	
		Elective	3	13
		Didactic	54	
		Project Research	5	
		Internship	3	
		Seminar	2	
		TOTAL HOURS:	64	

HSAT Electives (must take at least two)		
***	ENH601	Environmental Chemistry
	ENH606	Hazardous Waste Management

*** ENH622 IH Applications for Hazardous Substances *** Offered in alternate years

Recommended General Electives	
ENH603	Management of Occupational Health and Safety
ENH610	Environmental Health Disasters
ENH651	Risk Assessment of Environmental Hazards
EPI 610	Principles of Epidemiologic Research
EPI 616	Environmental Epidemiology
EPI 617	Occupational Epidemiology
HCO607	Public Health Law
IH 610	Environmental Hygiene in Developing Countries

A. Occupational Health Nursing Program Progress Report

B. Program Director: Kathleen C. Brown, RN, PhD

C. Program Description

The primary goal of the Occupational Health Nursing (OHN) Component of the Deep South Center is to prepare occupational health nursing graduates who will function as leaders in the field, and interact fully with other occupational health professionals in planning and implementing occupational health programs. NIOSH approved and funded occupational health nursing studies in the master's program at the University of Alabama School of Nursing in 1983 and doctoral studies in 1988. Current degrees offered include the PhD and MSN. Our enrollment during 2006-2007 was eight PhD students and ten MSN students (50% minority; 7 African-American students and two Asian students). The OHN faculty includes seven School of Nursing faculty members and seven affiliate faculty.

Dr. Kathleen Brown is Program Director of Occupational Health Nursing and provides leadership in development and implementation of OHN program offerings and interdisciplinary interaction with other ERC disciplines. The following table lists the members of the OHN core faculty:

CORE FACULTY	SPECIALTY AREA
Kathleen C. Brown, RN, PhD	Back injury prevention, management
Michael Weaver, RN, PhD	Worksite wellness, statistics/CV risks
Erica Pryor, RN, PhD	Epidemiology, bioterrorism, infection control
Gail Hill, CRNP, PhD	Primary care, injury management
Arlene Johnson, CRNP, PhD	Health care workers, error, sleep deprivation
Na-Jin Park, RN, PhD	Occupational stress, health risks
Debra Baldwin,CRNP,MSN, MBA	Injury management, health promotion

The goal of the master's program is to prepare occupational health nurse graduates to function as leaders in the field, provide advanced level occupational health nursing services, and interact fully with other occupational health professionals in planning and implementing occupational health programs. The OHN program offers a MSN degree with an individualized study option or an Occupational Health Nurse Practitioner Option (OHNP). The goal of the OHN Individually Designed Study option is to prepare graduate level OHNs who can assume advanced positions in industry, clinics, and government providing specialized nursing expertise in the occupational health field. It is expected that very highly motivated students who seek graduate preparation in occupational health nursing will be successful in this option. The goal of the OHNP Option is to prepare nurse practitioners for occupational health care settings. Graduates are eligible to sit for the ANCC and the American Academy of Nurse Practitioners Adult Nurse Practitioner certification examinations.

The specific goal of the PhD program for OHN is to prepare nurse researchers to conduct research that will contribute to NORA priorities in occupational health and safety and delivery of occupational health services.The doctoral study option for occupational health nurses received initial NIOSH support for the DSN in 1988 and was approved for the PhD program beginning 1998. The DSN program was phased out and in September 1999 the first PhD students enrolled. The shift to a PhD program was important to remain

competitive in our recruitment of the highest caliber of students for OHN. This sharpened and differentiated focus takes into account UAB's designation as a research extensive institution, the strengths of the UAB interdisciplinary environment, and the research expertise of UASON faculty. Occupational health research training opportunities and skills of our faculty constitute strengths in the School of Nursing doctoral program.

See Appendix A for a sample plan of studies for these programs.

D. Program Activities and Accomplishments

- Progress toward Goals:
  - The OHN program exceeded its trainee goals in 2006-2007 with 10 enrolled MSN students (5 is goal) and eight enrolled doctoral students in 2006-2007 (3 is goal).
  - The OHN faculty actively participate in MSN and PhD program planning, and in promoting ERC continuing education for OHNs. Faculty participate on planning committees, provide lectures and consultation in CE activities, and provide occupational health nursing services to employee groups.
- Trainee honors:
- Faculty honors:
  - Dr. Brown was a member of the NIOSH Board of Scientific Counselors (BSC) through December 2006.
- Trainee thesis and dissertations:
  - Arlene Johnson - The Influence of Sleep Deprivation on Performance and Occurrence of Error in Nurses Who Work the Night Shift
- New faculty positions: Arlene Johnson RN, PhD and Na-Jin Park RN, PhD
- New courses:
- Trainee recruitment:
  - In minority recruitment efforts, OHN faculty visited Jacksonville State University. Of the eight doctoral students and 10 MSN students enrolled during 2006-2007, nine OHN students represented minority groups (seven African-American and two Asian). The OHN program was successful in having 50% of the students representing minority groups

E. Program Products

Publications and Presentations

Kaewthummanukul,, T., Brown, K., Weaver, M., Thomas, R. (2006). Predictors of exercise participation in female hospital nurses. Journal of Advanced Nursing 54, 663-675.

Kaewthummanukul, T., Brown K. (2006). Determinants of employee participation in physical activity: A critical review of the literature. American Association of Occupational Health Nurses Journal, 54, 249-261.

Damrongsak, M., Brown, K., Weaver, M. (2006). Occupational Stress, Job satisfaction and Back Pain in Firefighters, Southern Nursing Research Society, Memphis, TN.

Grizzle, R., Brown, K., Weaver, M. (2006). Determinants of Healthy Eating Among Police Officers, American Association of Occupational Health Nurses Symposium, Albuquerque, NM.

Grizzle, R., Brown, K., Weaver, M. (2006). Determinants of Healthy Eating Among Police Officers. Emory University Regional Research Conference, Atlanta, GA.

Casebeer, L., Andolsek, K., Abdolrasulnia, M., Green, J., Weissman, N., Pryor, E., Zheng, S.,& Terndrup, T. (2006). Evaluation of an online bioterrorism continuing medical education course. *Journal of Continuing Education in the Health Professions, 26*, 137-44

Pryor, E., Heck, E., Norman, L., Weiner, B, Mathews, R., Black, J., & Terndrup, T. (2006). Integrated decision-making in response to weapons of mass destruction incidents: Development and initial evaluation of a course for healthcare professionals. *Prehospital and Disaster Medicine, 21*, 24-30

Broome, M., Pryor, E., Habermann, B., Pulley, L., & Kincaid, H. (2005). The Scientific Misconduct Questionnaire-Revised (SMR-Q): Validation and psychometric testing. *Accountability in Research*, 12, 263-280.

Pryor, E., Habermann, B., & Broome, M. (2007). Scientific misconduct from the perspective of research coordinators: A national survey. *Journal of Medical Ethics*, *33*, 365-9.

Pryor, E. R. (2006, November). *Impact of emerging infections on delivery of health care: Implications for nursing.* Presented at the Annual Lillian Harvey Fall Symposium: "One medicine-one health concept: The impact of emerging infectious and zoonotic diseases on the delivery of health care." Tuskegee University, Tuskegee, Alabama.

Pryor, E. R. (2006, November). *Disaster nursing*. Presented at the fall meeting, Nu Chapter, Honor Society of Nursing, Sigma Theta Tau International, UASON, Birmingham, Alabama.

Autrey, P., & Pryor, E. (2006, September). *Ready (or not?): Status of disasterpreparedness in Alabama hospitals (preliminary results)*. Presented at UASON Center for Nursing Research "Brown Bag" Seminar, Birmingham, Alabama.

Pryor, E., Habermann, B., & Broome, M. (2006, May). *Scientific misconduct: Perceptions of research coordinators participating in a national survey.* Poster presented at the Association of Clinical Research Professionals 2006 Global Conference and Exhibition, Phoenix, AZ.

Autrey, P. & Pryor, E. (2007, January). *A case study of the utilization of CQI teams in doctoral education.* Presented at the American Association of Colleges of Nursing (AACN) Doctoral Education Conference, Captiva Island, FL.

Weaver M (October 2006). Collecting Health Screening Data In Occupational Settings. Council for the Advancement of Nursing Science, 2006 National State of the Science Congress in Nursing Research. Washington, D.C.

B. Future Plans

- Explore opportunities for OHN preparation and funding at the DNP level as this School of Nursing proceeds with plans for education of DNP nurse practitioners.

- Continue active participation of ERC OHN students in interdisciplinary activities in which students from other core disciplines interact in teams, recognize the contributions and perspectives of each discipline, and are involved in focused ERC team activities and projects.

- Actively recruit students for both the OHNP and Individualized Study Option in OHN, and provide quality doctoral education in OHN.

- Market our programs through ERC and SON website, brochures, booth displays and mailings

- Provide OHN services that can be utilized for clinical and research training. The OHN program at the Deep South ERC will continue to be a provider of OHN services and will sustain our well-established educational model of focused practice, research, and teaching in occupational health nursing for undergraduate and graduate nursing students.

Appendix

SAMPLE PLAN OF STUDIES FOR MSN PROGRAM- OHNP

Fall Semester Year 1	
NUR 612 Advanced Pathophysiology	3
NAH 614 Assessment and Diagnostic Reasoning	4
NUR 601 Role Development for Advanced Nursing Practice	3
ENH 621 Fundamentals of Industrial Hygiene	3
ENH 680 Field Interdisciplinary Studies	1
Spring Semester Year 1	
NUR 630 Principles of Epidemiology	3
NUR 613 Pharmacology and Therapeutics	3
NOH 621 Advanced Occupational Health Nursing I	4
NOH 685 Practicum: Occupational Health Nurse Practitioner	3
ENH 681 Interdisciplinary Worksite Evaluations	2
Summer Year 1	
NUR 600 Research and Statistics for Advanced Practice	4
NOH 622 Advanced Occupational Health Nursing II	4
NOH 686 Practicum: Occupational Health Nurse Practitioner	3
Fall Semester Year 2	
ENH 650 Envir & Occ Toxicology and Disease	5
NOH 692 Residency: Occupational Health Nurse Practitioner	6
XXX XXX Elective	2
NUR 698 Research Practicum	1
ENH 680 Field Interdisciplinary Studies	1
Spring Semester Year 2	
NUR 602 Issues Affecting Nursing Practice	3
ENH 670 Fundamentals of Occupational Safety and Ergonomics	3
NUR 670 Occupational Health Management Principles	1
NUR 698 Research Practicum	1
ENH 681 Interdisciplinary Worksite Evaluations	2
	Total 65 hours

SAMPLE PLAN OF STUDIES FOR MSN PROGRAM- OHN Individualized Option

Fall Semester Year 1	
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NOM 611 Creativity Resources, PS Tools, HealthCare Quality	2
ENH 680 Field Interdisciplinary Studies	1
Spring Semester Year 1	
NUR 630 Principles of Epidemiology	3
NUR 602 Issues Affecting Advanced Practice	3
ENH 670 Fundamentals of Occupational Safety and Ergonomics	3
NUR 698 Research Practicum	1
ENH 681 Interdisciplinary Worksite Evaluations	2
Summer Term Year 1	
NOM 620 Patient/Stakeholder Outcomes Process Improvement	2
NUR 698 Research Practicum	1
XXX XXX Elective	2
Fall Semester Year 2	
NOM 621 Clinical Process Improvement	2
NUR 691 Practicum	3
ENH 621 Fundamentals of Industrial Hygiene	3
ENH 620 Envir & Occ Toxicology and Disease	5
ENH 680 Field Interdisciplinary Studies	1
Spring Semester Year 2	
NOM 622 Organizational Outcomes and Integration of Information	2
NUR 643 Introduction to Nursing Informatics	3
XXX XXX Elective	2
NUR 670 Occupational Health Management Principles	1
ENH 681 Interdisciplinary Worksite Evaluations	2
	Total 48 hours

SAMPLE PLAN OF STUDIES FOR PHD PROGRAM- OHN

Fall Semester Year 1

PHIL 770 Philosophy of Science	3
NUR 706 Theory Building in Nursing	3
NST 775 Introduction to Statistical Software Packages: SPSS and SASS	2
NPR 760 Conceptual Foundations of Promoting, Protecting and Restoring Health	3
ENH 680 Field Interdisciplinary Studies	1

Spring Semester Year 1

NST 776 Linear Models for Clinical Nursing Research	3
NRM 733 Qualitative Methods	3
ENH 670 Fundamentals of Occupational Safety and Ergonomics	3
ENH 681 Interdisciplinary Worksite Evaluations	2
NUR 798 Research Practicum	2

Summer Year 1

NRM 770 Design for Nursing Studies I	3
NST 777 Multivariate Statistical Methods for Clinical Nursing Research	3
GRD 717 Scientific Integrity	3

Fall Semester Year 2

NUR 772 Design for Nursing Studies II	3
ENH 621 Fundamentals of Industrial Hygiene	3
ENH 620 Envir & Occup Toxicology & Disease	5
ENH 680 Field Interdisciplinary Studies	1
NUR 798 Research Practicum	2

Spring Semester Year 2

NUR 771 Methods/Measurement in Nursing Research	3
NIC 761 Promoting, Protecting and Restoring Health Interventions	3
NUR 630 Epidemiology	3
XXX XXX Cognate Elective	2
NUR 670 Occupational Health Management Principles	1
ENH 681 Interdisciplinary Worksite Evaluations	2

Summer Year 2

NUR 798 Research Practicum	2
XXX XXX Cognate Elective	2

Year 3 Candidacy

Dissertation	18
	Total 84 hours

A. Occupational Safety and Ergonomics Program Progress Report

B. Program Director: Robert E. Thomas, PhD

C. Program Description

The primary purpose of the occupational safety and ergonomics (OS&E) program is to train graduate level professionals, with strong backgrounds in the engineering or physical sciences, to conduct research in occupational safety and to identify, analyze and control occupational safety hazards through engineering methodologies and design. Instruction in the management of these activities, including functioning as leaders in the safety profession, is an integral part of this program. In light of these goals and consistent with the missions of Auburn University as a land-grant institution, i.e., instruction, research, and extension, the specific objectives of the OS&E program may be delineated as follows: 1). Instruction. To provide OS&E educational opportunities for both full-time and part-time students at the graduate level through on-campus and DVD/ web-based course offerings. 2). Research. To advance knowledge in OS&E through faculty and student research, and to enhance the research capabilities of OS&E students by involving them in faculty supervised research activities. 3). Extension (Continuing Education and Outreach). By providing: a).opportunities for both basic and advanced level continuing education in occupational safety and ergonomics for practicing engineering, supervisory, occupational medical, and safety personnel b). OS&E educational opportunities for full-time on-campus students at the undergraduate level. c). assistance on a non-fee basis to those individuals and firms seeking information relative to OS&E. The (OS&E) program is an option in the Industrial and Systems Engineering (ISE) Graduate Program. Masters level OS&E training in both non-thesis (MISE degree) and thesis (MS Degree) formats and doctoral (PhD) training are offered. Enrollment in the OSE Program, as of the Fall Semester of the 2006-7 academic year, totaled 23 students. Of these, 4 were doctoral (2 full-time, 2-part-time) and 19 were masters (8 full-time, 11 part-time). Robert E. Thomas, PhD, PE, CPE presently serves as the program director. The OS&E faculty consisted of four core faculty and 11 support members. These faculty are listed in the following table.

FACULTY	SPECIALTY AREA
Robert E. Thomas, PhD	Ergonomics & Safety Engineering
Gerard A. Davis, PhD	Safety Engineering
Lewis N. Payton, PhD	Biomechanics/Manufacturing
Nathan T. Dorris, PhD	Human Factors
Leo A. Smith, PhD	Safety Engineering
Robert B. Rummer, PhD	Safety Engineering & Ergonomics
Saeed Maghsoodloo, PhD	Statistics
Robert L. Bulfin, PhD	Operations Research
Chan S. Park, PhD	Engineering Economy
Jeffrey S. Smith, PhD	Manufacturing Systems
Jorge Valenzuela, PhD	Operations Research
John L. Evans, PhD	Electronics Manufacturing
R. Kent Oestenstad, PhD	Industrial Hygiene
J. Garth Stauffer, MD	Occupational Medicine
E. Lodree, PhD	Production Systems

V. Jordan, PhD	Quality Control and Statistics

D. Program Activities and Accomplishments

-Progress towards goals

- All three of the graduates of the OS&E Program are presently employed in positions related to OSH. The goal is that at the two-year anniversary, 100% of OS&E graduates will indicate that, overall, the program prepared them well for work in research, academia, or advanced administrative positions in occupational injury, OS&E or engineering.
- OS&E Program students receiving NIOSH support continued to be enrolled in a total of 4 semester hours of interdisciplinary training involving over 40 direct contact hours per semester. The goals are 4 semester hours of interdisciplinary courses and 40 contact hours per academic year.
- A third full-time faculty member was recruited for the next (07-08) academic year. The goal is three full-time faculty members.
- Each OS&E faculty member was a PI on one or more extramural grants providing research opportunities for OS&E students. The goal is for each OS&E faculty to be listed as principle investigators on 1 research grant on average over three years.
- OS&E full-time faculty have a goal of assisting in development, implementation or evaluation of 1 professional development course per year. This goal was not met, due in large to our faculty shortage situation.
- Each OS&E full-time faculty member taught/participated in 2 or more courses that were offered in the Engineering Graduate Outreach Program. The goal is to participate in a minimum of two outreach activities annually.

-Trainee honors: Mr. Rani Muhdi, one of our OS&E doctoral students, was invited to present a research paper and presentation of results of his dissertation research at a prestigious international research conference in London in July 07. In addition, the OS&E program sponsored a student team (TigErgonomics) consisting or four graduate students and one undergraduate that were selected as one of the five finalists to participate in the Applied Ergonomics Student Design Competition at the 10th Annual Applied Ergonomics Conference in Dallas, Texas in March 2007.

-Faculty honors: Dr. Davis served as special advisor to the Dean of Engineering on student project safety. In this regard, he initiated development of a special series of on-line safety training modules that will be used by the College of Engineering to provide safety training to all students and faculty participating in College supported student projects. Dr. Thomas was appointed by the Ergonomics Committee of the American Industrial Hygiene Association to serve as a co-chair person for a special symposium on Ergonomics that will be held at the Associations annual meeting in Minneapolis, MN in June 2008.

-Trainee thesis and dissertations: One doctoral dissertation "The Effects of Behavior-Base Safety Techniques on Behavior Variation, Targeted and Non-Targeted Behaviors, and Productivity and Quality in Manufacturing Facilities" by Jessie F. Godbey.

-New faculty positions: A new faculty (3rd) faculty position was formally approved by the Auburn University Administration, and action was taken to fill/recruit against that position.

-New courses: Continued offering OSHA 10 Hour and 30 Hour training as component of undergraduate and graduate safety courses.

-Trainee recruitment: Recruitment of minorities continued to be a primary recruitment objective of the OS&E program. Two new minority (African-American) masters students and one (African-American) doctoral students were recruited for the 07-08 year.

E. Program Products (Publications and presentations)

Muhdi, R. & Davis, J. (in press). Cost analysis and budgeting for ergonomic hazard & repetitive strain. *Book chapter to appear in the ASSE Safety Handbook*, Des Plaines, IL. Note: ASSE Safety Handbook will be announced at the ASSE Professional Development Conference (Safety 2008), Las Vegas, NV

Tubbs, J. & Meacham, B. (2007). Egress design solutions: A guide to evacuation and crowd management planning. Reviewed by Muhdi, R. (in preparation). *Book review to appear in Fire Technology*. Note: Invited by Dr. John Watts (Editor-in-Chief).

LR Wade, J Davis, TS Marzilli & WH Weimar (2006). "Information Processing Capacity While Wearing Personal Protective Eyewear." *Ergonomics,* 49(10), 955-967.

Desai, D, S Walker & J Davis. "Using RULA to Generate Job Rotation Schedules: Perspective of Assembly Line Supervisors." *Journal of the American Society of Safety Engineers*, accepted (pending changes) for publication.

LR Wade & J Davis. "Postural sway following increased duration to an inclined surface." Submitted (in review), *Safety Science* (11/06).

Yasin, M., Czuchry, A., & Muhdi, R. (in press). Re-engineering organizational practices and processes to improve the customer focus of a marketing organization. *Advances in Competitiveness Research.*

Muhdi, R., Gwynne, S., & Davis, J. (accepted with minor revisions). The incorporation of empirical crawling data into the buildingEXODUS model. *Journal of Safety Science.*

Muhdi, R., & Davis, J. (in review). The development and representation of occupant movement data in building evacuation models. Fire Technology.

Varadarajan, R., Barker, K., Flynn, E., Thomas, R. "Comparison of Two Error Detection Methods in a Mail Order Pharmacy Serving Health Facilities," Accepted for publication by J American Pharmacists Assn, May 07, 13 manuscript pages.

Mitchell, D., Gallagher, T., Thomas, R. "The human Factors of Implementing Shift Work in Logging Operations," submitted to the Journal of Agricultural Safety and Health, March 2007, 17 manuscript pages

Muhdi, R, Garrett, A, Agarwal, R, Davis J, Dozier, G & Umphress, D (2006). The Application of Evolutionary Computation in Evacuation Planning." Proceedings of the IEEE Intelligent Transportation Systems Conference. Special session on Study and Potential Solutions to Evacuation Planning Issues for IEEE ITSC 2006. pp. 600-605.

Muhdi, R., Davis, J., & Blackburn, T. (2006). Improving occupant characteristics in performance-based evacuation modeling. *Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting.* San Francisco, CA, October 16-20, 2006.

Muhdi, R., & Davis, J. (2007). Helping safety managers make project decisions in the workplace: The weighted scoring decision making approach. *Proceedings of the American Society of Safety Engineers Professional Development Conference* (Safety 2007). Orlando, FL, June 25-27, 2007.

E. Future Plans

- Integrate our new faculty member into our program.
- Move into new state of the art research and academic facilities that will, effectively, double our present spaces/facilities.
- Continue to emphasize diversity in our student group and focus on recruitment of minority students.
- Continue emphasis on interdisciplinary activities with other programs in the ERC.

Appendix

SAMPLE PLAN OF STUDY for MISE/MS – OS&E

Fall Semester Year 1

INSY 6010 Safety Engineering I	3
INSY 7050 Industrial Hygiene and Environmental Hazards	3
INSY 7300 Advanced Engineering Statistics	3
INSY 7090 OSE/IP Seminar- Field Interdisciplinary Studies	2
INSY 7950 Departmental Seminar	1

Spring Semester Year 1

INSY 7020 Safety Engineering II	3
INSY 7420 Linear Programming & Network theory	3
INSY 6600 Manufacturing/Production Economics	3
INSY 7090 OSE/IP Seminar- ENH 680 Inter. Worksite Evals	2
INSY 7950 Departmental Seminar	1
Thesis (For MS candidates)	1

Fall Semester Year 2

INSY 7060 Ergonomics I	3
INSY 7080 Human Factors Engineering	3
INSY 7240 Production and Inventory Control Systems	3
Thesis (For MS candidates)	2
INSY 7090 OSE/IP Seminar- ENH 681Field Interdisc Studies	2
INSY 7950 Departmental Seminar	1
XXX Elective	3

Spring Semester Year 2

INSY 7070 Ergonomics II (Biomechanics)	3
INSY 7030 Manufacturing Systems Design & Analysis	3
Thesis or Project	3
INSY 7090 OSE/IP Seminar- Interdisc Worksite Evals	1
INSY 7950 Departmental Seminar	1
XXX Elective	3

SAMPLE PLAN OF STUDY FOR PhD PROGRAM OS&E

Fall Semester Year 1	
INSY 6010 Safety Engineering I	3
INSY 7050 Industrial Hygiene and Environmental Hazards	3
INSY 7300 Advanced Engineering Statistics	3
INSY 7090 OSE/IP Seminar- Field Interdisciplinary Studies	2
INSY 7950 Departmental Seminar	1
Spring Semester Year 1	
INSY 7020 Safety Engineering II	3
INSY 7420 Linear Programming & Network theory	3
INSY 6600 Manufacturing/Production Economics	3
INSY 7090 OSE/IP Seminar- ENH 680 Interdisc Worksite Evals	2
NUR 630 Epidemiology	3
INSY 7950 Departmental Seminar	1
Summer Semester Year 1	
INSY 8970 Research Methods in OS&E and OIPRT	3
INSY 8010 Advanced Safety Engineering	3
Dissertation or elective	3
INSY 7950 Departmental Seminar	1
Fall Semester Year 2	
INSY 7060 Ergonomics I	3
INSY 7080 Human Factors Engineering	3
INSY 7240 Production and Inventory Control Systems	3
Dissertation	2
INSY 7090 OSE/IP Seminar- ENH 681Field Interdisc Studies	2
INSY 7950 Departmental Seminar	1
Spring Semester Year 2(candidacy initiated)	
INSY 7070 Ergonomics II (Biomechanics)	3
INSY 7030 Manufacturing Systems Design & Analysis	3
Dissertation or elective	3
Elective	3
INSY 7090 OSE/IP Seminar- Interdisc Worksite Evals	1
INSY 7950 Departmental Seminar	1
Summer Semester Year 2	
INSY 8060 Advanced Ergonomics	3
Dissertation	6
Elective	3
INSY 7950 Departmental Seminar	1
Fall Semester Year 3	
Dissertation	6
INSY 7090 OSE/IP Seminar- Interdisc Worksite Evals	2
INSY 7950 Departmental Seminar	1
Elective	3
Spring Semester Year 3	
Research and Dissertation	12
INSY 7950 Departmental Seminar	1

A. Occupational Injury Prevention Research Training Program Progress Report

B. Program Director: Dr. Robert E. Thomas

C. Program Description

The primary purpose of the Occupational Injury Prevention Research Training Program (OIPRT) is to train graduate level professionals, with backgrounds in the engineering and physical sciences, on the public health model as applied to occupational injury prevention. Specifically, trainees are taught to: 1). Conduct research in occupational injury through multidisciplinary collaborations with experts in occupational epidemiology, public health, medicine, nursing, engineering/human factors-ergonomics, thus encouraging them to employ resources beyond their own areas of interest, and 2). address occupational injury issues through interdisciplinary approaches to problem resolution associated with the public health model (i.e. identify and prioritize problems, quantify and prioritize risk factors, identify strategies to prevent injuries, implement and evaluate controls, and monitor intervention efforts). The OIPRT is co-located with the Occupational Safety and Ergonomics (OS&E) Program in the Department of Industrial and Systems Engineering (ISE) at Auburn University.

Dr. Jerry Davis serves as the OIPRT program director. He and Dr. Robert E. Thomas were the full time faculty for the OIPRT Program, and Drs. John Waterbor and Lewis Payton were part-time members. They were assisted by 12 support faculty. The following table lists the core and support faculty:

FACULTY	SPECIALTY AREA
Robert E. Thomas, PhD	Ergonomics & Safety Engineering
Gerard A. Davis, PhD	Safety Engineering
Lewis N. Payton, PhD	Biomechanics/Manufacturing
John W. Waterbor, MD, DrPH	Injury Epidemiology
R. Kent Oestenstad, PhD	Industrial Hygiene
Kathleen Brown, PhD.,RN	Occupational Health Nursing
J Garth Stauffer, MD	Occupational Medicine
Robert B. Rummer, PhD	Safety Engineering and Ergonomics
Robert L. Bulfin, PhD	Operations Research
Chan S. Park, PhD	Engineering Economy
Jeffrey S. Smith, PhD	Manufacturing Systems
Jorge Valenzuela, PhD	Operations Research
John L. Evans, PhD	Electronics Manufacturing
Saeed Maghsoodloo	Statistics
E. Lodree, PhD	Production Systems
V. Jordan, PhD	Quality Control and Statistics

D. Program Activities and Accomplishments

- Progress towards goals

- OIPRT Program enrollment during spring semester was 2007 was 4 fulltime fulltime doctoral students, thus exceeding the goal of three students per year.
- Two doctoral students have graduated from the OIPRT Program since its inception in 2001, are presently employed in positions related to their training. They indicate that, overall, the program prepared them well for work in their positions (a goal of the program).
- OIPRT Program students continued to be enrolled in a total of 4 semester hours of interdisciplinary training involving over 40 direct contact hours per semester. The goals are 4 semester hours of interdisciplinary courses and 40 contact hours per academic year.
- A third full-time faculty member was recruited for the next (07-08) academic year. The goal is three full-time faculty members.
- Each OIPRT faculty member was a PI on one or more extramural grants providing research opportunities for OIPRT students. The goal is for each OS&E faculty to be listed as principle investigators on 1 research grant on average over three years.
- Each of the OIPRT trainees participated in funded research projects of OIPRT faculty. The goal is for all OIPRT students to participate in faculty funded research activities.
- OIPRT full-time faculty has a goal of assisting in development, implementation or evaluation of 1 professional development course per year. This goal was not met, due in large to our faculty shortage situation, but remains a definite goal.
- Each OIPRT full-time faculty member taught/participated in 2 or more courses that were offered in the Engineering Graduate Outreach Program. The goal is to participate in a minimum of two outreach activities annually.

-Trainee honors: One of our OIPRT students, Mr. Adam Piper, won the 2007 Dr. John Beno Memorial Scholarship which is awarded annually by the Public Risk Management Association (PRIMA). Mr. Piper was honored at the Association's national meeting in Boston, Mass in June. Mr. Piper was also selected by Auburn University as "Preparing Future Faculty Fellow" a high profile university level program designed for doctoral students who which to pursue careers in academia.

-Faculty Honors: Dr. Davis served as special advisor to the Dean of Engineering on student project safety. In this regard, he initiated development of a special series of on-line safety training modules that will be used by the College of Engineering to provide safety training to all students and faculty participating in College supported student projects. Dr. Thomas was appointed by the Ergonomics Committee of the American Industrial Hygiene Association to serve as a co-chair person for a special symposium on Ergonomics that will be held at the Associations annual meeting in Minneapolis, MN in June 2008.

-Trainee dissertations: One dissertation "Patient Handling: Restrictions and Conditions" was prepared in draft form by OIPRT doctoral student, G. Talley Holman. Mr. Holman is expected to make a final defense of his dissertation in fall 2007.

-New Courses: None

- Trainee recruitment: One new doctoral student, Mr. Eric Boelhouwer, was recruited. Recruitment of minorities continued to be a primary objective of the program.

E. Program Products (Publications and presentations)

Holman, G.T., Davis G.A., and Maghsoodloo, S., 2007, Effect of Dynamic Reach on Seated Reach Arcs, ("In Press", *Ergonomics*).

Holman, G.T., Thomas, R.E., and Brown, K, 2007, A Health Comparison of Alabama Nurses versus U.S. and Canadian Normative Populations (Prepared for submission to a professional journal).

Holman, G.T., Ellison, K.J., Maghsoodloo, S., and Thomas, R.E., 2007, The Effects of Job Environment and Culture on Patient Handling: A Nurses Perspective. (Prepared for submission to a professional journal).

Holman, G.T., LaTour, M.S., and Maghsoodloo, S., 2006, Changing Buyer Intent: Can Ergonomics Sell? (Prepared for submission to a professional journal).

Piper, A.K, "Hispanic Safety Training" podium presentation at Deep South Center Research Symposium, Auburn Al, October 2006.

F. Future Plans

- Integrate our new faculty member into our program.
- Move into new state of the art research and academic facilities that will, effectively, double our present spaces/facilities.
- Continue to emphasize diversity in our student group and focus on recruitment of minority students.
- Continue emphasis on interdisciplinary activities with other programs in the ERC.
- Maintain and emphasize our relationship with the Injury Control and Research Center (ICRC) at the University of Alabama at Birmingham.

Appendix

SAMPLE PLAN OF STUDY FOR PhD PROGRAM- OIPRT

Fall Semester Year 1

INSY 6010 Safety Engineering	3
INSY 7050 Industrial Hygiene and Environmental Hazards	3
INSY 7300 Advanced Engineering Statistics	3
INSY 7090 OSE/IP Seminar/ENH 680 Field Interdisciplinary Studies	2
INSY 7950 Departmental Seminar	1

Spring Semester Year 1

MCH 610 Overview of Public Health	3
INSY 7420 Linear Programming & Network theory	3
INSY 6600 Manufacturing/Production Economics	3
INSY 7090 OSE/IP Seminar/ENH 681 Interdisc Worksite Evals	2
INSY 7950 Departmental Seminar	1

Summer Semester Year 1

INSY 8970 Research Methods in OS&E and OIPRT	3
Dissertation and/or electives	6
INSY 7950 Departmental Seminar	1

Fall Semester Year 2

INSY 7060 Ergonomics I	3
EPI 610 Principles of Epidemiologic Research	4
INSY 7240 Production and Inventory Control Systems	3
Dissertation	1
INSY 7090 OSE/IP Seminar/ENH 680Field Interdisc Studies	2
INSY 7950 Departmental Seminar	1

Spring Semester Year 2(candidacy initiated)

INSY 7070 Ergonomics II (Biomechanics)	3
INSY 7030 Manufacturing Systems Design & Analysis	3
EPI 603 Injury Epidemiologic Principles and Prevention Strategies Or EPI 617 Occupational Epidemiology	3
INSY 7090 OSE/IP Seminar/ENH 681 Interdisc Worksite Evals	1
INSY 7950 Departmental Seminar	1

Summer Semester Year 2

INSY 8970 Special Topics in OIPRT	3
Dissertation	3
Elective	3
INSY 7950 Departmental Seminar	1

Fall Semester Year 3

Dissertation	6
Elective	3
INSY 7090 OSE/IP Seminar- Interdisc Worksite Evals	2

INSY 7950 Departmental Seminar	1
Spring Semester Year 3	
EPI 603 Injury Epidemiologic Principles and Prevention Strategies	
Or EPI 617 Occupational Epidemiology	3
Research and Dissertation	9
INSY 7950 Departmental Seminar	1

A. Continuing Education Program Progress Report

B. Program Director: Elizabeth H. Maples, PhD

C. Program Description

The overall goal for the Center's Continuing Education (CE) Program is to meet the educational needs of occupational health and safety professionals in our region through quality offerings. The Center consistently presents informative programs with an emphasis on excellence in education for the adult learner. Through these efforts, the Center has developed a reputation as a regional resource for staff development and professional advancement. The Center has an impressive history of commitment to outreach activities with faculty, staff and students involved. A host of efforts to further the field of occupational health and safety, with each program involved in educational development, presentations, lectures, seminars, consultations and other activities have been initiated by the CE Program.

Elizabeth H. Maples, PhD, has been the CE Program Director since 1987. With over two decades of experience in occupational health and safety and in continuing education make Dr. Maples extremely well qualified for her role. She supervises the activities of the CE staff and CE instructors, and is assisted by a dedicated staff of two highly motivated and qualified individuals, Ms. Gigi Talley and Ms. Paulisha Holt. As Project Coordinator, Ms. Talley is proficient in various software programs and has received formal training in the Center's registration software program. She coordinates training activities including meeting space and training materials. Ms. Paulisha Holt is the Center's Technology Coordinator. She maintains the Center's website with current course information, faculty and student news, occupational heath and safety news. She assists with marketing of workshops, through the creation of brochures, flyers, and the development of course web-links and assists with the publication of the Center's monthly e-News.

D. Program Activities and Accomplishments

The CE Program strives for excellence, and following the NIOSH guidelines for Centers of Excellence in Occupational Safety and Health Research Training, the CE Program has obtained financial support from other sources to maintain a strong, financially stable CE Program. Of special note, are the CE activities with other non-profit, professional associations, institutions and government agencies. The Center offered 46 programs this year with 1058 attendees.

The CE Program is reaching across the traditional occupational health and safety professions, as well as reaching many others that have safety and health responsibilities, such as case managers, clinic administrators, security personnel, first responders, human resource managers, legal nurse attorneys, environmental managers, medical services consultants, medical assistants and family nurse practitioners.

Occupational Safety and Ergonomics. In April of 2007, the Center was a sponsor of the ASSE Region IV Conference. The conference attracted 93 attendees from throughout the southeast. The Center also developed a new one day workshop on PPE.

Occupational Health Nursing. Our recognized strength lies in course offerings for individuals performing or managing occupational health testing (spirometry and audiometric). The reputation for these offerings is such that we oftentimes reach course attendance capacity. The course director for the Center's Audiometric Testing and Hearing Conservation workshop, Georgia Holmes, AuD, is recognized by the Council for Occupational Hearing Conservation as being a leader in producing attendees that obtain certification. These programs are also offered as in-house training programs. The Center has a close relationship with the local OHN associations serving the state of Alabama (Central and South AL Assoc. of OHN) and has collaborated on several

workshops, attracting OHNs, safety managers, case managers and others with OH responsibilities. A web-based workshop on *Management of Occupational Health Programs* is offered through the Center.

Occupational Medicine. The Center has a tradition of holding an annual Occupational Medicine Update, now in its 18th year. The 18th OccMed Update was held on September 15 - 16, 2006, with NIOSH Director, John Howard, MD, MPH as the keynote speaker.
Industrial Hygiene. The majority of CE programs provide ABIH points for practicing CIHs. The Center has a close working relationship with the Alabama Local Section of the AIHA that has resulted in new offerings for industrial hygienists to our region (Basic Electrical Safety, November 2006).

Multidisciplinary. The Center's *NORA Research Priority Symposium* was definitely a highlight of this reporting period. The symposium brought together researchers, academicians, practitioners and advocates to explore ways to take results research into the practice of worker health and safety. Another highlight of the Center's activities include *Workplace Violence Symposium: Preventing Violence in the HealthCare Setting.* This one day program was attended by 54 individuals representing private industry and local government agencies. The symposium was well received and another program has been scheduled for March 2008.

The Center is privileged to have developed close working relationships with many experts in the occupational health and safety field. An individual's credentials must be reviewed and approved by a majority of the Executive Committee before being named a course director. Individuals with excellent credentials and experiences provide instruction for the Center. Recognizing that evaluation is an essential element as we strive for excellence, we have taken a strategic approach to evaluation. The evaluation program involves several components to determine if the CE Program is meeting course objectives and having a regional impact on work practices at the practitioner level.

During this reporting period, several important needs assessment activities were completed to provide direction for the CE program. In an effort to collect impact evaluations, the CE Program continues to take a systematic approach to gathering information from participants 90 days after the training was offered. During workshops participants are told of the importance of their input in evaluating the effectiveness of the Center's CE programs. In a follow-up letter, participants, they are reminded that they will receive a survey by mail in a few months. The summaries are shared with course directors, DSC faculty and also posted on our website. Additionally, the following needs assessments were conducted during this period:

- Industrial Hygiene - members of AL-AIHA, June 2007.
- Safety Professionals / Safety Engineers, April 2007.
- Public Employees involved in safety programs, February 2007.

E. Program Products N/A

F. Future Plans
With financial support from NIOSH for CE activities, the CE Program has set high goals for this project period. A 5 year strategic plan has been developed, drawing on recent needs assessments and input from Center stakeholders. The Executive Committee, with the advice from our Board of Advisors, has continued to develop and refine Center wide and program specific goals and objectives and their outcome measures. Common goals for the academic programs include developing continuing education courses in which faculty are significantly involved. Goals for the CE program include: increasing the use of innovative technologies, increasing faculty commitment to continuing education offerings, reviewing continuing education needs of alumni, employers and industry, ensuring an adequate number of continuing education offerings from each discipline, and promoting outreach efforts in the entire ERC region.

The Center is spearheading the NIOSH ERCs Seminar and Research Symposium in April 2008. This is a joint effort of the North Carolina ERC, the South Florida ERC and the Deep South ERC.

- June 2008: Year 1: One-day Hazardous Substances Workshop, NIOSH Research Symposium, Pensacola Beach, FL. Lead: Deep South ERC
- June 2009: Year 2: One-day Occupational Medicine Workshop, NIOSH Research Symposium, Orlando, FL. Lead: Sunshine ERC
- June 2010: Year 3: One-day Safety in the Workplace, One-day Industrial Hygiene / Safety Workshop and NORA Research Symposium, Savannah, GA. Lead: NC ERC.
- June 2011: Year 4: One-day Occupational Health Nursing and NIOSH Research Symposium, Atlanta, GA. Lead: Deep South ERC.
- June 2012: Year 5: Disaster Preparedness and Response in the Workplace, and NIOSH Research Symposium, Biloxi, MS or Miami, FL. Lead: Sunshine ERC.

Recognizing that professional development needs are dynamic, our goals and objectives will be periodically revisited to remain effective.

A. Hazardous Substances Training Progress Report

B. Program Director: Elizabeth H. Maples, PhD

C. Program Description

The overall goal of the HST Program is to train professionals who are involved in emergency response incidents with hazardous substances or must work with hazardous substances during maintenance or standard operating procedures. The Center has received funding under the NIEHS/NIOSH agreement since 1990. The Center has a proven training record and has researched the training needs of the target audience, developed and implemented training, and evaluated the overall HST Program.

Elizabeth H. Maples, PhD, has been the HST Program Director since 1990. She is assisted by Ms. Gigi Talley and Ms. Paulisha Holt. Dr. Maples, Ms. Talley and Ms. Holt have interactive roles, and with limited resources develop, manage and evaluate the program, and provide effective and efficient administration of the HST Program. The HST Program recognizes the importance of qualified, engaging, and credible instructors for its programs. The HST Program is strengthened by the role that the Center faculty play in the overall HST Program. Center faculty from the academic programs are supportive of, and are responsible for various stages and aspects of HST offerings. ERC faculty provide guidance on course topic selection, recommend and approve HST course instructors, and they help identify new, innovative approaches to meet the education needs of the HST target audience. The ERC faculty assists in the selection of instructors by reviewing biographical information of potential instructors and making recommendations for their employment

D. Program Activities and Accomplishments

a. Training Accomplishments

During this reporting period, the HST program offered 10 programs attended by 166 participants. The Center collaborated with the Public Employees Safety Council of Alabama (PESCA) to offer a one day conference that attracted 49 attendees. PESCA is a non-profit organization of individuals with safety, risk management and health responsibilities working in the public sector.

b. Needs Assessments

The HST Program continued to evaluate course impact through *Survey Monkey,* a web-based survey instrument, participants are asked four questions:

- *What was the most valuable thing you learned in the course?*
- *Did the course provide you with practical, useful information that you are able to apply on the job?*
- *Do you have any other comments about the course?*
- *Or about the Center?*

Surveys are sent 90 days after the completion of the workshops. Responses are returned electronically in *Survey Monkey*, thus protecting the anonymity of the sender. The Center monitors the response rate to determine if a follow-up message is appropriate. If so, follow-up questionnaires are again sent electronically to all participants. Responses are confidential and used to address course weaknesses and recognize strengths. Through this process, our aim is to collect accounts of policy and programs that were changed or implemented at the participant's organization since attendance at the course; capture lessons learned from participants; and solicit input on program effectiveness from various stakeholders. To date, responses from the impact evaluation have been overwhelmingly positive.

To try to obtain the highest response rate possible if emails and mailed surveys are not returned, phone calls are placed to attendees to improve this important data-collection aspect of our evaluation plan. This has increased

our response rate, but plans are to continue to encourage individuals to respond through the *Survey Monkey* to maintain confidentiality.

Key elements from a 2005 needs assessment was shared with the HST administrators with the Sunshine ERC and the North Carolina ERC. from the summarized results of this assessment indicated: 1) preferred months to attend training were March, April, May, and October; 2) preferred locations were Birmingham, Atlanta, Gulf/Panhandle; 3) preferred format was two day and one day short courses; and, 4) preferred topics for training included legal issues, management, risk assessment, exposure evaluation, control strategies, CSP review, and workers ' compensation. The summary of this needs assessment was shared with the North Carolina ERC and South Florida ERC to provide guidance for a regional ERC conference.

The Center also turns to its Board of Advisors for direction to determine the educational needs of individuals from state and local government agencies who have responsibilities in handling hazardous substances. The Board has several members with key responsibilities in environmental health issues and hazardous materials response who have provided assistance in developing, implementing and evaluating HST training courses.

Beginning in 2005, the HST Program began an effort to capture demographic information on the attendees of the Center's HST Program. In addition to basic demographic information (ethnicity, education, credentials, and job title), we ask how many people are affected by the attendees work practices as a measure of the potential impact of HST training courses on worker safety and health.

E. Program Products

F. Future Plans

Regional Occupational Health and Safety Conference. In early 2006, the Continuing Education/HST (CE) Program Directors at The University of South Florida, Sunshine Education and Research Center (Sunshine ERC), North Carolina Occupational Safety and Health Education and Research Center (NC ERC) and the Deep South Center for Occupational Health and Safety (Deep South ERC) began discussing the possibility of collaborating to meet regional CE and HST training needs. A five year plan for joint programs has developed. The following is a summary of that plan.

2. An annual jointly sponsored training program
3. An annual Research Symposia for faculty, trainees, researchers and practitioners
4. An annual coordinated regional impact/needs assessment

The first planned conference/symposium will be held in April 2008. A one-day seminar on respiratory protection programs, risk communication, ethical issues. The second day is a symposium on NIOSH research and research to practice (R2P). The purpose of the NIOSH Research Symposium will be to provide faculty, trainees and practitioners in the entire southeastern U.S. with an opportunity to share and interact about research findings and their applicability to practice. Each year a theme, a location, and lead center will be selected to plan and coordinate the Southeastern Conference on Occupational Safety and Health. A tentative schedule follows:

- June 2008: Year 1: One-day Hazardous Substances Workshop, NIOSH Research Symposium, Pensacola Beach, FL. Lead: Deep South ERC
- June 2009: Year 2: One-day Occupational Medicine Workshop, NIOSH Research Symposium, Orlando, FL. Lead: Sunshine ERC
- June 2010: Year 3: One-day Safety in the Workplace, One-day Industrial Hygiene / Safety Workshop and NORA Research Symposium, Savannah, GA. Lead: NC ERC.

- June 2011: Year 4: One-day Occupational Health Nursing, and NIOSH Research Symposium, Atlanta, GA. Lead: Deep South ERC.
- June 2012: Year 5: Disaster Preparedness and Response in the Workplace, and NIOSH Research Symposium, Biloxi, MS or Miami, FL. Lead: Sunshine ERC.

Each Center will be involved in all aspects of the planning, development, implementation and evaluation of the Conference. Specific details on all aspects of the Conference, including course selection, agendas, instructors, training materials, brochures, mailing lists, professional credits, financial management, on-site management, and registration process will be agreed upon and presented in a letter of agreement for each Center to review and approve.

Faculty and trainees from all ERCs, and invited speakers will participate in the NORA Symposium. Practitioners from the community and faculty and trainees from NIOSH TPGs and other universities in the region will be invited to participate as well. A special marketing emphasis will be placed on reaching students and faculty from our region's HBCUs. Marketing materials have been developed, the hotel contract arranged and the conference agenda finalized. In addition, plans for developing and distributing the annual impact/needs assessment forms have been discussed and will be finalized in early 2008.

We believe that the formation of this partnership can make a significant impact on the work practices of occupational and environmental health and safety practitioners in our regions. By combining our resources, the ERCs can avoid possible duplication of effort, while offering dynamic and state-of-the-art training opportunities for practitioners and researchers, and broadening the awareness of NIOSH programs.

Spirometry Workshop
Spirometry Workshop
Printed November 16, 2007

Registrant Name	Company Name	Paid	Fee	Confirm?
Green, Phyllis	Occupational Health Services	pd	465.00	
McKee, Nicki	Chatom Primary Care PC	pd	465.00	
McSwain, Steve	Occupational Testing, Inc.	pd	465.00	
Quattlebaum, Christie	Alabama Specialty Clinic	pd	465.00	
Wooten, Della	MeadWestVaCo	pd	465.00	
Carney, Johnna	MMC Healthworks	pd	250.00	
Waters, Steve	Washington Group International	pd	250.00	

Total Registrant Count: 7

Audiometric Testing and Hearing Conservation
Audiometric Testing and Hearing Conservation
Printed November 16, 2007

Registrant Name	Company Name	Paid	Fee	Confirm?
Bailey, Jennifer	ACIPCO Health Service	pd	600.00	
Elmore, Angie	Occupational Health Services	pd	600.00	
Glover, Cassandra	Rock-Tenn Company	pd	600.00	
Green, Phyllis	Occupational Health Services	pd	600.00	
Hadaway, Jr, James Timothy	Industrial Health Council	pd	600.00	
Mims, Dale	Georgia Pacific	pd	600.00	
Olinger, Asley	AJT & Associates, Inc.	pd	600.00	
Price, James	Onsite Medical Screening	pd	600.00	

Total Registrant Count: 8

Audiometric Testing and Hearing Conservation
Audiometric Testing Refresher
Printed November 16, 2007

Registrant Name	Company Name	Paid	Fee	Confirm?
Atkins, RN, Bobby	Kimberly Clark Corp	pd	285.00	
Brewer, CRNP, Aletta	DCH Center for Occupational Health	pd	285.00	
Burke, Patsy	Occupational Testing, Inc.	pd	285.00	
Hammond, Angela	Anniston Medical Clinic	pd	285.00	
Norman, DrPH, Melissa	UAB School of Public Health	pd	0.00	
Porter, RN, Terry L	Federal Occupational Health	pd	285.00	
Waters, Steve	Washington Group International	pd	285.00	

Total Registrant Count: 7

Audiometric Testing and Hearing Conservation
Audiometric Testing Refresher
Printed November 16, 2007

Registrant Name	Company Name	Paid	Fee	Confirm?
Atkins, RN, Bobby	Kimberly Clark Corp	pd	285.00	
Brewer, CRNP, Aletta	DCH Center for Occupational Health	pd	285.00	
Burke, Patsy	Occupational Testing, Inc.	pd	285.00	
Hammond, Angela	Anniston Medical Clinic	pd	285.00	
Norman, DrPH, Melissa	UAB School of Public Health	pd	0.00	
Porter, RN, Terry L	Federal Occupational Health	pd	285.00	
Waters, Steve	Washington Group International	pd	285.00	

Total Registrant Count: 7