



Department of Physics
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MEMORANDUM

To: Edson Justiniano, Chair
Educational Policies and Planning Committee

From: Michael Dingfelder
Assistant Chair for Graduate Studies in Physics

Date: October 12 2009

Subject: Approval of new Health Physics concentration within the MS program in Physics

It is my pleasure to submit to your committee the enclosed proposal for establishing a new concentration under the MS in Physics degree program. The concentration has been approved by the Graduate Curriculum Committee (GCC) (see April 1 2009 agenda and April 1 2009 and April 15 2009 minutes) and the Graduate School Administrative Board (GSAB) (see April 27 2009 meeting minutes).

The Department of Physics, Thomas Harriot College of Arts and Sciences, in collaboration with the Department of Health Education and Promotion, College of Health and Human Performance, proposes to establish a Health Physics concentration within the current Physics Master's Degree Program of the Department of Physics. This concentration is planned to fill an urgent need for trained Health Physics professionals brought about by resurgence in the development of nuclear power, an expansion of programs in national security, and an ageing cadre of current Health Physics professionals. This, coupled with the fact that there is no longer a state supported program in Health Physics in the University of North Carolina system encourages the initiation of a program at East Carolina University. Because the new Health Physics concentration will be developed and housed as a component of the current MS degree in Physics, it will take advantage of courses that are common to the Medical Physics and traditional Applied Physics concentrations and thus necessitates a reduced number of new courses specific to this new degree concentration. These new courses (PHYS 6750, PHYS 7730, and PHYS 7740) have been approved by the GCC and GSAB and are listed in the current Graduate Catalog (2009-2010).

The collaboration between the Departments of Physics and Health Education and Promotion (HE&P) profits from experience gained by HE&P in their BS degree focusing on Health Physics, and their MS in Environmental Health with concentration on Industrial Hygiene. New courses in nuclear instrumentation and field studies in health physics will be available to students in HE&P, thereby strengthening their current degree programs in Environmental Health. Reciprocally, existing courses in Environmental Health will be integrated into the Physics Department's Health Physics concentration to produce graduates with unique skills to enter the workplace. Many employment opportunities in the modern workplace build upon skills in both radiation and environmental sciences, and graduates of this new degree concentration will be uniquely qualified for those opportunities.

Students in the MS-Health Physics concentration will be required to complete a minimum of 39 semester hours of didactic and laboratory courses from a prescribed set of core, concentration, and elective courses while maintaining a minimum cumulative GPA of 3.0. In lieu of Master's research and thesis, students in the Health Physics option will spend from 10 to 16 weeks fulfilling an approved rigorous practicum in applied health physics in an industrial, university, or National Laboratory setting. The specific student practicum can be arranged by the Chair of the Department of Physics, Assistant Chair for Graduate Studies in Physics, a faculty member, or the student; final approval of the practicum will be the responsibility of the Graduate Committee of the Department of Physics.

The proposed concentration in Health Physics requires a minimum of 39 semester hours and includes the following curriculum:

1. Core – 20 s.h.

PHYS 5410:	Introduction to Quantum Mechanics (3)*
PHYS 5600/01:	Modern Electronics (3,0)
PHYS 5900/01:	Computational Physics (3,0)
PHYS 6816:	Student Seminar (1)

Health Physics concentration:

EHST 5164	Radiological Health Field Operation (1)
EHST 5800/01	Solid and Hazardous Waste Management and Laboratory (3,0)
PHYS 6900	Introduction to Research (3)

Minimum 3 semester hours of electives from:

EHST 6700	Industrial Hygiene Application (3)
PHYS 6200	Thermodynamics and Statistical Physics (3)
PHYS 7450	Solid State Physics (3)

2. Concentration – 19 s.h.

RONC 7370	Biological Effects of Radiation (4)
HLTH 6011	Introduction to Epidemiology (3)
PHYS 6700	Health Physics (3)

PHYS 6750	Risk Assessment, Risk Communication and Regulations (3)
PHYS 7730	Radiation Instrumentation (3)
PHYS 7740	Special Problems in Radiation Dosimetry and Modeling (3)

*Students in the Health Physics concentration who have an undergraduate course in quantum mechanics may substitute a 3 s.h. elective, listed above, for PHYS 5410.