East Carolina University

Department of Physics
Graduate Program

Graduate Student Handbook
August 2010

Tomorrow starts here

Please note that this document is in a continual stage of update. As tuition changes, new graduate policy is adopted, etc., the basic content might change. For up-to-date information contact the Assistant Chair for Graduate Studies in Physics.

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Introduction

The University and the School of Medicine

East Carolina University (ECU) is located in Greenville, North Carolina. The east campus is adjacent to downtown; the Health Sciences Campus (including the School of Medicine) is adjacent to Pitt County Memorial Hospital in west Greenville. “With a mission of teaching, research, and service, East Carolina University is a dynamic institution connecting people and ideas, finding solutions to problems, and seeking the challenges of the future.”

The Department of Information Technology & Computing Services serves as an instructional laboratory facility in direct support of computer-related course work. The academic computing unit maintains various instructional and research software packages and provides technical assistance to faculty and graduate research users.

East Carolina University has renewed and strengthened its commitment to research, scholarship, and creative activity for both faculty and students, becoming a national research university with an enrollment of nearly 28,000. Graduate students represent 21% of that enrollment. Extramural support for university activities has gone from $33 million to over $40 million in the last five years.

The School of Medicine is a national leader in the education and training of general physicians and the delivery of health services to a rural population through innovations such as telemedicine. It is also a constituent of University Health Systems of Eastern Carolina, which includes the Pitt County Memorial Hospital.

The City

Greenville and Pitt County are the hub of eastern North Carolina for residential, retail, health care, educational, cultural, culinary, recreational and sports activities. Growing from an economy founded on agriculture, the city has branched into an attractive site for international manufacturing, medical facilities, and educational institutions. A strong economy, temperate climate and access to world class medical, education, and recreation facilities make Greenville a great place to live and work. Living in and around Greenville gives easy access to not only everything here, but also choice destinations within 60-90 minutes away, including the research triangle area—RDU airport, Chapel Hill-Cary-Raleigh-Durham—access to all things water-related—sandy beaches on the Atlantic Ocean, Intracoastal Waterway and along the Pamlico and Neuse rivers for boating, sailing, fishing—and historic sites like Beaufort, Bath and New Bern.

The City of Greenville (http://www.greenvillenc.gov), home to more than 81,700 people and one of the fastest growing large cities in the state, and capital of Pitt County (around 159,000 people), is located approximately 85 miles east of Raleigh and Research Triangle Park (http://www.rtp.org) and is accessible by four-lane highways and nearby airports. Research Triangle Park is one of the largest research parks in the United States, and is home to 135 organizations, 100 of them research and development related. With over 44,000 employees entering the 8-mile by 2-mile Park each day, it is a vital foundation to both the state's and Southeastern region's economies.

In addition, Greenville is within easy driving distance to several major natural and entertainment resources in the US. Driving 85 miles to the east you can enjoy the beautiful sand beaches of the Atlantic Ocean and ferry to the famous North Carolina outer-bank islands. Within a circle of 200 miles radius, you can either enjoy the spectacular entertainment shows in Myrtle Beach, South Carolina or go to the historical town of Williamsburg in Virginia to find several historical and amusement parks including the Busch Gardens, Colonial Williamsburg and Water Country USA. The nation's capital, Washington, DC, is approximately 265 miles north and the Great Smoky Mountain National Park is located about 300 miles to the west of Greenville on the border of North Carolina and Tennessee and attracts many mountain hikers and campers.

Programs of Study

MS Program

The MS program in Physics at East Carolina University offers three options – Applied Physics, Medical Physics and Health Physics to satisfy the carreer goals of most physics students. All three options are designed as two-year programs. The Applied Physics option is built around a core curriculum designed to give the candidate a thorough foundation in the major fields of physics. Students interested in working in business, industry, education, or continuing toward a PhD degree are encouraged to pursue the MS degree in this option.

East Carolina was the first university in North Carolina to offer the master degree program in medical physics. The program was initiated in 1990 and has now graduated more than 60 students (some entered the program having earned doctoral degrees in other fields). Most of the graduates have found jobs in major hospitals although some have gone on to pursue doctoral programs. The Medical Physics option is accredited by the Commission of Accreditation of Medical Physics Education Programs (CAMPEP; http://www.campep.org) since 2003 an is designed as a terminal degree for professional work in medical physics; it includes a substantial clinical component that enables its graduates to move into a career in diagnostic or therapeutic medical physics. The track record of our graduates is excellent.

The new Health Physics option responds to the urgent need for trained Health Physics professionals brought about by the resurgence in the development of nuclear power, an expansion of programs in national security, and an ageing cadre of current Health Physics professionals. The Health Physics option enrolls its first students in Fall of 2010.

Many graduates from the master's program in applied physics have gone to work in industry as scientists or engineers, and some have continued their education in prestigious PhD programs. Our graduates have many career options available to them: some have received faculty appointments in other universities, others have accepted positions at hospitals and university medical centers around the country.

PhD Program

The physics department offers a PhD program in biomedical physics. It is preferred that students enrolled in this program have a master degree in physics, but students with MS degrees in biology, physiology or related fields have been accepted and been successful in the doctoral program. The PhD program will also accept students who have a BS degree in physics or a related science; these students must follow the MS–Applied Physics curriculum prior to being accepted for candidacy in the PhD program. This program draws on faculty members in ECU's physical, chemical, biological, and medical science departments to meet the need for highly trained scientists who can integrate knowledge of the physical sciences with biomedical research. It also provides interdisciplinary studies in physics, biology, chemistry, and medicine to allow students to pursue solutions to problems of medical interest by studying the application of physical processes to an understanding of biological material or processes.

Students who enter the PhD program will be limited to take only one course listed as a core requirement for the MS–Medical Physics per semester, as deemed appropriate by the Assistant Chair for Graduate Studies. If by the time of his/her doctoral graduation, a student

have independently fulfilled the requirements for both the MS–Medical Physics and PhD degrees, the Department will recommend that the student be granted a dual degree – PhD and MS–Medical Physics – to the Graduate School.

Faculty

The Department of Physics currently has seventeen graduate faculty members with a wide range of research interests that include atomic and molecular physics, acoustic physics, biophysics, computational physics and modeling, laser physics, and solar physics. The application of laser scattering and absorption, as well as electron and ion transport in tissue and tissue-like media, combined with theoretical modeling provide unique insight into the biomedical techniques for diagnosis and treatment of disease. The work of our faculty has demonstrated that a fertile environment exists here for advanced study and research.

Financial Aid and Tuition

The Graduate School encourages every graduate student to complete the Free Application for Federal Student Aid (FAFSA) at http://www.ecu.edu/financial/. The FAFSA is used to determine eligibility for Federal Financial Aid and it is also useful to the program to determine eligibility for other forms of financial assistance such as a graduate assistantship or scholarship.

Graduate students typically receive either teaching or research assistantship from Physics department for performing duties specified by the sponsor(s) during the academic or calendar year. For MS students, assistantships are offered for the academic year, although summer research stipends may be available to those graduate students conducting research or clinical study under supervision of faculty members. MS students enrolled in the Spring Semester and pre-enrolled for the Fall Semester do not need to enroll in the summer session to receive the stipend. Others, such as the students graduating during a summer session or new students admitted for the summer, are required by Graduate School Policy to enroll in the summer session to receive a stipend and/or to graduate.

For Ph.D. students, teaching and research assistantships are offered on a 12-month basis with students expected to engage in research studies during the summer. For Ph.D. students entering the graduate program with a BS (or BA) degree, the academic and teaching loads of the first two years are typically the same as for students in the MS program.

Because of the limited funds available for Departmental teaching assistantships, students in the Ph.D. program should make arrangements to work with a faculty member with an externally funded research project offering a research assistantship as soon as they expect to become actively involved in research. Students are also encouraged to apply for research fellowships offered by many state and federal agencies. Graduate School policies also limit the use of state funds:

Students in master's programs should not receive assistantship support for more than five semesters (excluding summer sessions). Students in doctoral programs should not receive assistantship support for more than ten semesters (excluding summer sessions).

If not already claiming the status of a North Carolina resident, all graduate students are encouraged to become acquainted with the rules and procedures involved in acquiring the status

of North Carolina resident for tuition purposes (see e.g. http://www.ecu.edu/cs-acad/gradschool/residency.cfm). Tuition and tuition assistance is divided in two parts: an out-of-state tuition plus the regular (in-state) tuition. Currently, the Graduate School applies the following rules:

- For out-of-state and international students, out-of-state tuition remissions are generally available from the Graduate School on a semester-by-semester basis. However, the number of tuition remissions per program is highly limited and subject to additional restrictions from the Thomas Harriot College of Arts and Sciences.
- In-state tuition and fees are the responsibility of the student.
- For PhD students with full time assistantship, in-state tuition (but not the fees) is provided by the Graduate School or the funding source of the assistantship.

The criteria for the out-of-state tuition waiver is that the student must have completed admission to a graduate program; have an overall or senior year GPA of 3.0 or higher; and have a GRE score (V+Q) of 1000 or larger (with no one score less than 400), or a MAT score of 50 or higher, or a GMAT score of 500 or better.

Academic Common Market: The Academic Common Market (ACM) is a collection of regional states that allow in-state tuition to out-of-state students for specific unique academic programs. The PhD program in Biomedical Physics is listed in the ACM and thus students from ACM states can apply to attend this program at the in-state tuition rate. In addition the MS – Medical Physics option is recognized by the States of Virginia and Alabama for ACM "instate" tuition. Thus for a student in these states, it is possible to attend ECU to study for the MS degree in Medical Physics and be considered a North Carolina resident with regard to tuition costs. To apply for in-state tuition the student must apply through their state office of the ACM to get certified for in-state tuition. Information on procedures for ACM acceptance is given on the ACM web site http://www.sreb.org/programs/acm/acmindex.asp.

Degree Requirements and Curriculum

Course Requirement

Normal course load for a full-time graduate student is a minimum of 9 SH and may not exceed 15 SH in one semester.

MS – Applied Physics

A minimum of thirty-four semester hours of credit are required of candidates in this concentration. All candidates for the Applied Physics concentration participate in a project involving original research and complete a Master's thesis. This project may involve participation in an already active research program or may be initiated by the student under the active sponsorship of a graduate faculty member.

Curriculum: The requirement of the Master of Science in Physics with concentration in Applied Physics (MS-AP) may be found in the latest ECU Graduate Catalog(http://www.ecu.edu/aa/SrchCatalog.cfm). The curriculum includes the following courses:

Required Courses (minimum 28 SH):

Course Number		SH	Name	Offer Period
PHYS	5311	3	Mathematical Physics I	1 year (F10/F11)
PHYS	5600/01	3,0	Modern Electronics	1 year (S11/S12)
PHYS	5900/01	3,0	Computational Physics	1 year (F10/F11)
PHYS	6200	3	Thermodynamics and Statistical Physics	2 year (S11/S13)
PHYS	6300	3	Electrodynamics I	1 year (F10/F11)
PHYS	6410	3	Quantum Mechanics I I	1 year (F10/F11)
PHYS	6816	1	Seminar I	1 year (F10/F11)
PHYS	7000	6	Thesis (repeated once)	As requested
PHYS	7450	3	Solid State Physics	2 year (S12/S14)

Elective Courses (minimum 6 SH):

Course Number		SH	Name	Offer Period
PHYS	6250	3	Classical Mechanics	2 year (F11/F13)
PHYS	6700	3	Health Physics	2 year (F10/F12)
PHYS	6715	3	Biomedical Physics	2 year (S11/S13)
PHYS	6900	3	Introduction to Research	As requested
PHYS	7110	3	Mathematics Physics II	2 year (S11/S13)
PHYS	7330	3	Radiation Instrumentation	2 year (S11/S13)

MS – Medical Physics

A minimum of thirty-eight semester hours of credit are required of candidates in this concentration, including a minimum of six semester hours of credit of clinical study in lieu of a thesis. Although there is no formal thesis requirement, involvement in research leading to a publication is recommended in the medical physics concentration. Medical Physics students participate in extensive clinical training at the Brody School of Medicine, the Pitt County Memorial Hospital, and the Leo Jenkins Cancer Center.

Curriculum: The requirement of the Master of Science in Physics with concentration in Medical Physics (MS-MP) may be found in the latest ECU Graduate Catalog (http://www.ecu.edu/aa/SrchCatalog.cfm). The curriculum includes the following courses:

Required Courses (minimum 35 SH)

Course Number		SH	Name	Offer Period
PHYS	5600/01	3	Modern Electronics	1 year (S11/S12)
PHYS	5900/01	3	Computational Physics	1 year (F10/F11)
PHYS	6700	3	Health Physics	2 year (F10/F12)
PHYS	6710	3	Nuclear Medicine Physics	2 year (F11/F13)
PHYS	6715	3	Biomedical Physics	2 year (S11/S13)
PHYS	6720	3	Physics of Medical Imaging	2 year (S12/S14)
RONC	6718	3	Therapeutic Radiological Physics	1 year (F10/F11)
PHYS	6816	1	Student Seminar	1 year (F10/F11)
RONC	6992	3	Radiation Therapy Physics	1 year (S11/S12)
RONC	6993	3	Clinical and Medical Dosimetry	1 year (S11/S12)
RONC	7370	4	Biological Effects of Radiation	1 year (F10/F11)
PHYS	7992	8	Clinical Rotation in Radiation Therapy Physics	Every semester

Elective Courses (minimum 3 SH):

Course Number		SH	Name	Offer Period
PHYS	5410*	3	Introduction to Quantum Mechanics	2 year (S12/S14)
PHYS	6300	3	Electrodynamics I	1 year (F10/F11)
PHYS	6900	3	Introduction to Research	As requested

*required if no undergraduate quantum mechanics has been taken;

Medical Physics students also need to obtain proficiency in medical terminology; can take either

BIOL	2130	4	Survey of human physiology and anatomy	
or				1 year (F,S, SS)
HIMA	3000	2	Medical Terminology for Health Professionals	

MS – Health Physics

A minimum of thirty-nine semester hours of credit are required of candidates in this concentration. In addition, students must complete a 10-16 week rigorous practicum in applied health physics in an industrial, university or national laboratory setting in lieu of a thesis. This program is offered in collaboration with the Department of Health Education and Promotion, College of Health and Human Performance.

Curriculum: The requirement of the Master of Science in Physics with concentration in Health Physics (MS-HP) may be found in the latest ECU Graduate Catalog (http://www.ecu.edu/cs-acad/aa/SrchCatalog.cfm). The curriculum includes the following courses:

Required Courses (minimum 33 SH)

Course Number		SH	Name	Offer Period
PHYS	5600/01	3	Modern Electronics	1 year (S11/S12)
PHYS	5900/01	3	Computational Physics	1 year (F10/F11)
PHYS	6700	3	Health Physics	2 year (F10/F12)
PHYS	6750	3	Risk Assessment, Risk Communication and Regula-	2 year (F11/F13)

			tions	
PHYS	6816	1	Student Seminar	1 year (F10/F11)
PHYS	6900	3	Introduction to Research	As requested
PHYS	7730	3	Radiation Instrumentation	2 year (S11/S13)
PHYS	7740	3	Special Problems in Radiation Dosimetry and Modelling	2 year (S12/S14)
HLTH	6011	3	Introduction to Epidemiology	Every semester
EHST	5164	1	Radiological Health Field Operations	2 year (F11/F13)
EHST	5800/01	3,0	Solid and Hazardous Waste Management and Laboratory	1 year (S11/S12)
RONC	7370	4	Biological Effects of Radiation	1 year (F10/F11)

Elective Courses (minimum 6 SH):

Course Number		SH	Name	Offer Period
PHYS	5410*	3	Introduction to Quantum Mechanics	2 year (S12/S14)
PHYS	6250	3	Thermodynamics and Statistical Physics	2 year (S11/S13)
PHYS	7450	3	Solid State Physics	2 year (S12/S14)
EHST	6700	3	Industrial Hygiene Applications	1 year (S11/S12)

*required if no undergraduate quantum mechanics has been taken;

PhD – Biomedical Physics

The PhD program requires a minimum of thirty semester hours of courses beyond the master's degree. The student will take a minimum of six semester hours of courses from a physics core, a minimum of six semester hours of courses from a biomedical core, and a minimum of eighteen semester hours of dissertation research courses. Additional courses may be required by the Graduate Committee, or dissertation director, depending on the individual student's preparation.

It is preferred that students enrolled in this program have a master's degree in physics, applied physics, medical physics, or related fields, or must have shown a significant progress towards obtaining a master's degree in the above fields. The PhD program will also accept students who have a BS degree in physics or a related science; these students must follow the MS Applied Physics curriculum prior to being accepted for candidacy in the PhD program.

Curriculum: The requirement of the PhD in Biomedical Physics (PhD-BMP) may be found in the latest ECU Graduate Catalog (http://www.ecu.edu/aa/SrchCatalog.cfm). Courses offered beyond the master's curriculum include but are not limited to:

Physics Core (minimum 6 SH)

Course Number		SH	Name	Offer Period
PHYS	6810	3	Topics in Atomic Collisions	2 year (F11/F13)
PHYS	7110	3	Mathematics Physics II	2 year (S11/S13)
PHYS	7310	3	Electrodynamics II	2 year (S12/S14)
PHYS	7410	3	Quantum Mechanics II	2 year (S11/S13)
PHYS	7450	3	Solid State Physics	2 year (S12/S14)
PHYS	7715	3	Biomedical Optics	2 year (F10/F12)
PHYS	7730	3	Radiation Instrumentation	2 year (S11/S13)
PHYS	7740	3	Special Problems in Radiation Dosimetry and Modeling	2 year (S12/S14)

PHYS	8526/7/8	1-3	Advanced Readings in Physics I, II, III	As requested
PHYS	8910	3	Research Problems in Biomedical Physics	As requested

Biomedical Core (minimum 6 SH)

Course Number		SH	Name
BIOS	7021/22	3,3	Biostatistics for Health Professionals I/II
BIOC	7301	4	Biochemistry
BIOC	7310	3	Molecular Biochemistry
BIOC	7345	2	Cell Motility
BIOC	8320	4	Biochemistry II
PHLY	7701	3	Graduate Cellular Physiology
PHLY	7702	5	Graduate Organ Systems Physiology
PHLY	7710	3	Advanced Topics in Physiology
BIOL	6030	3	Topics in Cell Biology
BIOL	7480/81	4,0	Cell Biology
BIOL	7870	3	Molecular Genetics

Grade Requirement

All students are subject to the Graduate School's *Probation and Termination Policy*:

In order to remain in good academic standing, graduate students must maintain a minimum cumulative GPA of 3.0 once they have a total of 9 credit hours attempted and any additional or higher academic standards established by their program of study. Students who fail to meet their program's criteria may be placed on probation or dismissed from the program.*

Students who fail to remain in good academic standing in accordance with the paragraph above, will be automatically placed on academic probation by the Graduate School, during which time they will have an opportunity to correct their academic deficiencies. The probationary period will last for the term(s) in which the next nine credit hours are attempted. Enrollment in the Graduate School will be automatically terminated for students who fail to correct their academic deficiencies by the end of the probationary period. Graduate students will not be allowed to take classes once it becomes mathematically impossible to achieve an overall cumulative GPA of 3.00 by the end of the remaining probationary period.

Students may appeal dismissal decisions by following the process outlined in the Graduate School Appeals Procedure.

For more detail please refer to the Graduate School Website.

In addition, a physics graduate student is further expected to maintain steady progress toward the degree. He or she is expected to achieve a grade of "excellent" or "good" (A or B) in each course taken for graduate credit. An accumulation of a grade C on courses totaling in excess of 6 SH will result in termination of a MS student's enrollment. For students in the MS-Medical Physics option, a grade of C or F in any one required graduate course will result in the termination of enrollment. PhD students must maintain a cumulative B average in all formal course work. If the cumulative average falls below B, the student's program is subject to termination.

A student who receives notice of termination may appeal his or her case to the Graduate Committee, Medical Physics Committee, or the PhD Executive Committee in Biomedical Physics in writing by means of a letter to the Chair of the Department of Physics.

Examination Requirement

MS students are required to pass a written Qualifying Examination. Please refer to the Appendix 2 for the department policy on the written Qualifying Examination.

PhD students are required to pass the doctoral candidacy examination. Students have two chances to pass the candidacy examination. When a student has passed the examination, the student will be admitted to *candidacy* for the PhD degree in Biomedical Physics. Please refer to Appendix 2 of this handbook for the department policy on the Candidacy Examination.

Seminar Requirement

In the semester immediately following their becoming candidates to the degree (summer sessions excluded), PhD students are required to enroll in PHYS 6817 and present a seminar on a subject outside their immediate area of research. The topic for the seminar will be chosen by the Department of Physics Graduate Committee and provided to the student seven calendar days prior to the scheduled date of the presentation. Students will be responsible for developing a representative bibliography on the topic, preparing, and delivering a professional forty-five minute presentation to the Department of Physics followed by a question and answer period not to last more than forty-five minutes. Students may seek advice towards the preparation of their seminar from the Assistant Chair for Graduate Studies in Physics and from their dissertation advisers (if they have already chosen an adviser). The PhD candidates will be graded on the quality of their seminar by the Department of Physics Graduate Committee in consultation with the students' dissertation adviser (when applicable).

MS Thesis Requirement

Upon successful completion of the Qualifying Examination, MS students in the Applied Physics option are required to write and defend a thesis based on original research. MS students in the Medical Physics and Health Physics options are *not required* to write a thesis, but may choose to do so. Please refer to Appendixes 3 & 4 for departmental policy and requirement on the MS thesis.

PhD Dissertation Requirement

Before a PhD candidate begins dissertation research, his or her advisory committee must approve a dissertation proposal containing

- a brief review of the pertinent literature,
- a short statement on the nature of the problem and the objectives of the proposed study,
- an outline of a feasible research plan.

The proposal is to be presented in the format of a typical proposal prepared for the National Institute of Health, i.e., NIH format (see Appendix 3a). The student shall present his/her research proposal to the candidate's dissertation committee and the faculty in a

seminar and defend the proposed work in terms of its originality and significance. The presentation will be public, but the student is to be questioned only by faculty; the success of the proposal and its defense will be judged by the dissertation committee.

Upon completion of the proposed research the candidate must document the research and the findings in a written dissertation. The goal of the dissertation is to reflect original research that contributes significant knowledge to the field of biomedical physics. It must be effectively written and demonstrate a clear understanding of the historical foundations of the work. Further, it must present a clear description of the research methods and a thorough analysis of the strengths, weaknesses, and significance of the research results.

Research Skill Requirement

MS Students are strongly recommended to take the course on *Introduction to Research* (PHYS 6900) in their first year for active involvement with the research projects conducted with a faculty member in either the Physics Department or the School of Medicine. Additional research courses including PHYS 6526/27/28 can be taken in the second year. These courses will provide excellent opportunity for MS students to prepare for their thesis, clinical training, or internship in the second year. In addition, competence in one or more computer languages is required for graduate students. Please refer to Appendix 5 for more details.

All Doctoral students are required to take a research ethics course. This requirement can be met by enrolling in GRAD7004 offered by the Graduate School or HUMS7004 offered by the Brody School of Medicine. Training in Radiation Safety and/or Chemical safety is also required for those students conducting research in laboratories involving these potential hazards. Training in these areas is offered by the respective safety offices.

All graduate students are required to attend departmental colloquia and seminars except for medical or university related scheduling conflicts. A student who is consistently absent from the departmental colloquia and seminars without proper reasons may be suspended from the teaching or research assistantship offered by the department.

NC Resident Status

Domestic students (US citizen or permanent resident) are eligible to have NC residency after 1 year of residence at Greenville. These students are recommended to establish this status after the 1st year. Those who choose not to do so may be responsible for the out-of-state portion of tuition by themselves. See Appendix 8 for more details.

Graduation

Upon successful completion of all requirements for an MS or PhD degree, a student should prepare for graduation by contacting the Graduate Administrative Assistant who will review the student's record to verify that all requirements have been met. In addition, the GAA will prepare the Graduation Summary and submit it to Registrar's Office. The student must file the application for graduation form with the registrar **one** semester prior to the completion of the degree program.

Chronological Line of Progress

This section is designed to assist graduate students in organizing their schedules and tracking their progress toward degrees. The beginning semester is assumed to be Fall semester. Dates are approximate. Exact dates are published in the academic calendars.

MS Students – Applied Physics Option

Time	Tasks	Deadline
After acceptance	Early registration of courses; tuition payment	
1st semester	MS Qualifying Exam	Fri before classes start
	Late registration; changes; tuition payment	Tue. of 2nd week
	Faculty visitation for research topics	end of 8th week
	Advising and pre-registration for spring semester	~10th week
2nd semester	Take PHYS 6900 (if not taken last semester) to find a topic for summer research and advisor	2nd week
	Find thesis advisor and thesis committee member and finish the thesis proposal form	End of 2nd semester
	Advising and registration for Fall semester (incl. PHYS7000)	~ 10th week
1st summer	Conduct research and report (preferably with the thesis advisor)	Beginning of Fall semester
3rd semester	late registration; tuition payment	Tue. of 2nd week
	Find thesis advisor and committee members and fill out thesis proposal form (if advisor is changed)	4th week of the 3rd semester
	Take PHYS 7000: thesis work	End of 3rd semester
	Advising and registration for spring classes	~10th week
4th semester	late registration; tuition payment	Tue. of 2nd week
	Take PHYS 7000: thesis work	End of 4th semester
	Fill out graduation form and pay the fee at Registrar's office	3 months prior to planned graduation
	Thesis defense: thesis must be sent to committee members	7days prior to defense date
	Graduation: Checkout procedures *	2 weeks after the thesis defense
2nd summer (optional)	Continuation of thesis work, defense and checkout procedures.	End of 2nd summer session

* Deliver signed and approved thesis to the Graduate School via the electronic thesis submission process. The registrar uses the degree checklist to certify that the student has completed all requirements. For students who need to transfer credits from outside of ECU to satisfy the credit hour requirement for the degree, he or she has to fill out a need sheet that is available in the departmental office. This should be done well ahead of time, preferably a year ahead.

MS Students – Medical Physics Option

Schedule is similar to the AP option, except that a thesis is not required. If a student chooses to write a thesis, the schedule is identical to that of the AP option students. Students should contact the Assistant Chair for Graduate Studies well ahead of time to coordinate the Clinical Rotation. Seats will be assigned on priority, scheduling issues, grades, prerequisites, etc. Seats are not guaranteed for a certain semester. The Clinical rotation is offered each semester, and if necessary also during the 11-week summer session. Up to 4 seats are available each semester.

MS Students – Health Physics Option

Schedule is similar to the AP option, except that a thesis is not required. If a student chooses to write a thesis, the schedule is identical to that of the AP option students. Students should contact the Assistant Chair for Graduate Studies during the end of the first Fall semester to coordinate the required internship. The internship should be taken during the first summer.

PhD students:

Entry is assumed to occur following the MS degree. The first semester is assumed to be a Fall semester. Dates are approximate. Exact dates are published in the academic calendars.

Time	**Tasks**	**Deadline**
After acceptance	Early registration of courses; tuition payment	
1st semester	Entry Qualifying Exam (if not taken as MS student)	Fri before classes start
	Late registration; changes; tuition payment	Tue. of 2nd week
	Faculty visitation to select research topics	end of 8th week
	Prepare and take the Part I of the Candidacy Examination	By the beginning of 2nd semester
	Advising and registration for spring semester	~10th week
2nd semester	Identify dissertation advisor and research committee members. Initiate research with research advisor.	End of 2nd semester
	Advising and registration for fall semester	~10th week
1st summer	Conduct dissertation research	
	Prepare to re-take Part I the Candidacy Examination if it was not passed the 1st time and take Part II of the Candidacy Examination	By the beginning of 3rd semester
3rd semester	Take PHYS 9000: Dissertation research	
	Advising and registration for spring semester	~10th week
	Complete and present dissertation proposal	By end of 3rd semester
4th semester	Take PHYS 9000: Dissertation research	
	Advising and registration for fall semester	~10th week
2nd Summer	Conduct dissertation research	
5th semester	Take PHYS 9000: Dissertation research	
	Begin writing dissertation	End of 5th semester
	Advising and registration for spring semester	~10th week
6th semester	Take PHYS 9000;	
	complete writing dissertation	March 15
	Fill out graduation form and pay the fee at Registrar's office	3 months prior to planned graduation
	Dissertation defense: Dissertation must be delivered to committee members	7days prior to defense date
	Submit Research Committee approved dissertation to Graduate school*	7 days before Graduate School deadline
	Graduation: Checkout procedures - see Graduate Administrative Assistant for check out procedures	After the dissertation accepted by Graduate School
3rd summer (optional)	Continuation of thesis work, defense and checkout procedures.	As required

* Deliver signed and approved thesis to the Graduate School via the electronic thesis submission process. The registrar uses the degree checklist to certify that the student has completed all requirements. For students who need to transfer credits from outside of ECU to satisfy the credit hour re-

quirement for the degree, he or she has to fill out a need sheet that is available in the departmental office. This should be done well ahead of time, preferably a year ahead.

Sample Study Plans for the MS and PhD program

The following sample study plans are intended for students entering the Master's program in Fall of 2010 and reflect the minimum requirements. Students are encouraged to enroll in additional classes and participate in research. All MS options should be completed in 2 years.

MS – Applied Physics

First Semester: Fall 2010 (10+ s.h.)

PHYS 5311	Mathematical Physics I (3 s.h.)
PHYS 5900/01	Computational Physics (3,0 s.h.)
PHYS 6410	Quantum Mechanics I (3 s.h.)
PHYS 6816	Seminar (1 s.h.)
(PHYS 6700	ELECTIVE: Health Physics (3 s.h.))

Second Semester: Spring 2011 (9 s.h.)

PHYS 5600/01	Modern Electronics (3,0 s.h.)
PHYS 6200	Thermodynamics and Statistical Physics (3 s.h.)
(PHYS 6900	ELECTIVE: Introduction to Research (3 s.h.))
(PHYS 6715	ELECTIVE: Biomedical Physics (3 s.h.))
(PHYS 7730	ELECTIVE: Radiation Instrumentation (3 s.h.))

During Summer of 2011 start with research for Thesis.

Third Semester: Fall 2011 (6+ s.h.)

PHYS 6300	Electrodynamics I (3 s.h.)
PHYS 7000	Thesis (3 s.h.)
(PHYS 6250	ELECTIVE: Classical Mechanics I (3 s.h.))
(PHYS 5900/01	Available: Computational Physics (3,0 s.h.))

4. Semester: Spring 2012 (6+ s.h.)

PHYS 7000	Thesis (3 s.h.)
PHYS 7450	Solid State Physics (3 s.h.)
(PHYS 5600/01	Available: Modern Electronics (3,0 s.h.))

MS – Medical Physics

First Semester: Fall 2010 (11 s.h.)

PHYS 6700	Health Physics (3 s.h.)
PHYS 6718	Therapeutic Radiological Physics (3 s.h.)
PHYS 6816	Seminar (1 s.h.)
RONC 7370	Biological Effects of Radiation (4 s.h.)

Second Semester: Spring 2011 (9 s.h.)

PHYS 6715	Biomedical Physics (3 s.h.)
PHYS 6992	Radiation Therapy Physics (3 s.h.)
PHYS 6993	Clinical and Medical Dosimetry (3 s.h.)

Third Semester: Fall 2011 (6 s.h + 8 s.h.)

PHYS 5900/01	Computational Physics (3/0 s.h.)
PHYS 6710	Nuclear Medicine Physics (3 s.h.)
PHYS 7992	Clinical Rotation in Radiation Physics[§] (8 s.h.)

4. Semester: Spring 2012 (9 s.h + 4 s.h.)

PHYS 5410	Intro to Quantum Mechanics[*] (3 s.h.)
PHYS 5600/01	Modern Electronics (3/0 s.h.)
PHYS 6720	Physics of Medical Imaging (3 s.h.)
BIOL 2130	Survey of Human Physiology and Anatomy[§] (4 s.h.)

Footnotes:

[§]The Clinical Rotation is offered three times a year, Fall semester, Spring semester, Summer session and is limited to 4 students. The BIOL 2130 (or alternatively HIMA 3000: Medical Terminology for Health Professionals) should be taken in the other semester.

[*] For students who have had an undergraduate Quantum Mechanics course, PHYS 5410 can be substituted by an elective.

MS – Health Physics

First Semester: Fall 2010 (11 s.h.)

PHYS 5900	Computational Physics (3 s.h.)
PHYS 6700	Health Physics (3 s.h.)
PHYS 6816	Seminar (1 s.h.)
RONC 7370	Biological Effects of Radiation (4 s.h.)

Second Semester: Spring 2011 (9 s.h.)

PHYS 5600	Modern Electronics (3 s.h.)
PHYS 7730	Radiation Instrumentation (3 s.h.)
EHST 5800/01	Solid and Hazardous Waste Management and laboratory (3,0 s.h.)

During Summer of 2011: Practicum

Third Semester: Fall 2011 (10 s.h.)

PHYS 6750	Risk Assessment, Risk Communication and Regulations (3 s.h.)
PHYS 6900	Introduction to Research (3 s.h.)
EHST 5164	Radiological Health Field Operations (1 s.h.)
HLTH 6011	Introduction to Epidemiology (3 s.h.)

4. Semester: Spring 2012 (6 s.h. + 3 s.h. electives)

PHYS 5410	Intro to Quantum Mechanics* (3 s.h.)
PHYS 7740	Special Problems in Radiation Dosimetry and Modeling (3 s.h.)
ELECTIVES:	
PHYS 6700	Thermodynamics and Statistical Physics (3 s.h.) §
PHYS 7450	Solid State Physics (3 s.h.)
EHST 6700	Industrial Hygiene Applications (3 s.h.)

Footnotes:

§ This elective will be offered in Spring 2011. If chosen, HLTH 6011will be taken in Spring 2012 instead.

* For students who have had an undergraduate Quantum Mechanics course, PHYS 5410 can be substituted by an elective.

The following sample study plan is intended for students entering the PhD program in Fall of 2010 and planning to take Part I of the Candidacy Exam as early as possible. Since PhD students come with different backgrounds each student will likely have a slightly different study plan. Please consult with the Assistant Chair for Graduate Studies for more detailes.

PhD – Biomedical Physics

First Semester: Fall 2010 (10+ s.h.)

PHYS 5311	Mathematical Physics I (3 s.h.)
PHYS 6300	Electrodynamics I (3,0 s.h.)
PHYS 6410	Quantum Mechanics I (3 s.h.)
PHYS 6816	Seminar (1 s.h.)

Second Semester: Spring 2011 (9 s.h.)

PHYS 7310	Electrodynamics II (3 s.h.)
PHYS 7410	Quantum Mechanics II (3 s.h.)
BBBB ????	Elective from the Biomedical core.

Appendix 1
Graduate Advising Policy (January 1989, revised January 2006)

1. The Assistant Chair for Graduate Studies is the official advisor to all graduate students.
2. The graduate student must
   a. declare in the first week of each semester courses to be taken in the subsequent semester,
   b. register for all courses during the first two days of the early registration period,
   c. have course registration signed by the Assistant Chair for Graduate Studies,
   d. when applicable, have schedule change forms signed by the Assistant Chair for Graduate Studies.
3. In addition, Teaching/Research Assistants must
   a. take all required courses at the earliest offering,
   b. not drop the required courses except by special permission (given by the departmental graduate committee only under unusual circumstances),
   c. inform the Assistant Chair for Graduate Studies within a week of an effective drop-out from any course. (The effective drop-out is defined as no attendance of classes during one full week; professor in charge of the course is also asked to report any occurrence of a drop-out as well as any situation that might automatically trigger an F in the course.)

➢Note: TA/RA students failing to follow the above rules could have their assistantships suspended in the subsequent semester.

Appendix 2 Graduate Examination Policy (revised 4/27/2007)

I.–Qualifying Examination

A. Purpose

The purpose of the Qualifying Examination is to determine whether a student enrolled in the Physics graduate program qualifies to become a candidate for the MS degree in Physics and whether he/she is prepared to enter the PhD program. All students entering the Physics graduate program are required to take this exam upon entering the program.

B. Examination Dates

The examination will be given every Fall semester, one day prior to the official beginning of classes. When necessary, a second examination will be given one day prior to the beginning of classes in the Spring semester.

C. Length

The examination shall not exceed two hours in length.

D. Content

The examination will consist of the online Major Field Test in Physics offered by Educational Testing Service (Princeton, NJ). The test will cover the main topics in physics at the undergraduate level. Topics covered include Classical Mechanics and Relativity, Electromagnetism, Optics &Waves, Thermodynamics and Statistical Mechanics, Quantum Mechanics and Atomic Physics, Special Topics (e.g. condensed matter physics, nuclear and particle physics, Lagrangian and Hamiltonian formalism), and Miscellaneous Topics (e.g. astrophysics, computer applications, mathematical methods). A detailed list of topics and subtopics with their specific weights in the exam are available from the Department of Physics Office of Graduate Studies.

E. Administering the Examination

The Assistant Chair for Graduate Studies in Physics is responsible for administering the examination, he/she shall obtain the scores and statistical analysis of the results from Educational Testing Service and report them to the Physics Graduate Committee.

F. Passing Score

The Graduate Committee will convene upon receipt of the student grades and statistical analysis to make a final decision on the result. The Graduate Committee may use comparative data gathered from other institutions to establish the passing score on the examination. The general guideline observed is that students are expected to score 60 or better in Classical Mechanics and Relativity, and Electromagnetism and obtain a minimum score of 40 in the remaining four areas of the exam.

G. Students Who Must Take the Examination

All graduate students entering the Department of Physics Graduate Program must take the Qualifying Examination on one of the dates indicated above.

H. Outcomes of the Examination

The outcome of the Qualifying Examination varies according to the program in which the student is enrolled. In all cases, students found lacking knowledge deemed fundamental for

their success will be directed to enroll in PHYS 6528 – Readings in Physics during their first semester in the program, and, under the direct supervision of the Assistant Chair for Graduate Studies in Physics, will develop and carry out a plan of study that will mitigate the detected weakness(es). Otherwise, the outcomes of the exam will be as follows:

1. MS – Medical Physics, Health Physics and Applied Physics options: Students that pass the Qualifying Examination can proceed without restrictions. Those students who do not pass the exam must follow the procedure above and will be allowed to proceed without further restrictions upon passing PHYS 6528 with a grade of B or better.
2. PhD: Students that pass the Qualifying Examination can proceed without restrictions. Those students who do not pass the exam must follow the procedure above and will be allowed to proceed without further restrictions upon passing PHYS 6528 with a grade of B or better. These students might further be required, at the discretion of the Department of Physics Graduate Committee, and taking into consideration other factors such as performance in their coursework and recommendation of the Physics Graduate Faculty to complete and defend a Masters Thesis prior to their Candidacy Examination.

II. Doctoral Candidacy Examination

A. Purpose

The doctoral candidacy examination evaluates students for their understanding of the broad fields of physics and life sciences related to biomedical physics. The examination modules for each student are determined by recommendation of the student's advisor with the final decision on content made by the Department of Physics Graduate Committee. The candidacy exam will consist of a written examination.

B. Examination

1. **Examination Dates**
   The examination will be given on a scheduled date and time at the beginning of the Fall and Spring semesters.
2. **Length**
   The examination will be given in two parts to be completed in two consecutive weekends. Part I of the examination, of approximately six hours in length, will be given on Saturday the first weekend. On the second weekend the three modules of Part II will be given according to a schedule set by the Assistant Chair for Graduate Studies in Physics.
3. **Content**
   The examination will consist of questions that cover the graduate curriculum of the student. Any member of the faculty can submit questions to the Department of Physics Graduate Committee, however, that Committee has the sole responsibility to or-

ganize the questions into modules and finalize the examination. The candidacy examination may be individualized for each student, but shall consist of two parts: Part I is a test of general physics (four hours duration), and graduate level Quantum Mechanics, and Electrodynamics (two hours duration) required of all students and Part II is a specialized set of three modules covering the graduate curriculum and research interests of the student. For example, Part II may consist of modules chosen from, but not limited to, thermodynamics and statistical physics, physiology, medical physics, biophysics, biochemistry, computational physics, and cell and molecular biology.

4. **Administration of the Examination**

   The Department of Physics Graduate Committee shall administer the examination and oversee its evaluation.

5. **Passing Score**

   The Department of Physics Graduate Committee will convene upon receipt of the graded examinations to make the final decision on the results. A passing score of the overall examination is 60% on Part I combined with a score of more than 60% on each of at least two of the three modules included in Part II.

6. **Students Required to Take the Examination**

   Students enrolled into the Ph.D. program must take the Candidacy Examination at the first opportunity following the completion of the required graduate courses as determined by the-Department of Physics Graduate Committee.

7. **Retaking the Examination**

   The Candidacy Examination may not be taken more than twice. If a student fails the examination on his/her first attempt, then he/she must retake all sections of the examination. Under special conditions, as determined by the Department of Physics Graduate Committee, a student might be allowed to retake only specific sections of the Candidacy Exam the next time the examination is offered (generally the following semester).

C. Candidacy

When a student has passed the Doctoral Candidacy Examination, the Department of Physics Graduate Committee will direct the Assistant Chair for Graduate Studies in Physics to forward to the Dean of the Graduate School its recommendation that the student be admitted to candidacy for the degree, Doctor of Philosophy in Biomedical Physics.

Appendix 3 Physics Department MS Thesis Policy (Approved by the Faculty – January 6, 2006)

This policy is for the protection of the students as well as the benefit of the physics department. The student will benefit from knowing the steps and timeline that should lead to a timely completion and a proper defense of his/her thesis. The physics department will have an opportunity to monitor the thesis progress and will abide by uniform procedures pertaining to the demonstration of this progress.

Schedules for students taking less than three courses per semester will be determined on an individual basis in consultation with the Assistant Chair for Graduate Studies in Physics.

Failure to follow this policy might result in a poor or failing grade in PHYS 7000 (thesis), suspension and/or dismissal from the graduate program.

1. The thesis must be on a basic or applied physics research topic. It is recommended that the student should obtain updated information on the format and style of the thesis from the Graduate School. References in the thesis should follow the style of articles in any journal published by the American Institute of Physics.

2. <u>By the sixth week of the second semester</u>, the student should submit to the Assistant Chair for Graduate Studies the name of his/her thesis director and the general topic of the area of research.

3. The thesis committee, composed of three members in addition to the thesis director, is to be selected by the student with the consent of the thesis director and the Assistant Chair for Graduate Studies. The responsibility for the choice of the thesis committee rests with the student and the thesis director. This entails the selection of two persons from the Graduate Faculty of the ECU Physics Department plus one person from outside of the department. In case the thesis director is from a department other than physics the outside member on the thesis committee shall be of the same department as the thesis director.

4. The thesis proposal outlines the work to be performed for the thesis. This proposal must be submitted to the thesis committee. Copies of the thesis proposal form are available in the physics office. By the end of the second semester, the thesis proposal is due. Once accepted by the thesis committee, the thesis topic shall be forwarded to the Assistant Chair for Graduate Studies.

5. <u>By the eighth week of each semester following submission of the thesis proposal</u>, the student shall present an informal half-hour progress report to the thesis committee. After the first presentation to the thesis committee only, these presentations are open to all interested people. Following each presentation, the thesis committee will submit a confidential report to the Graduate Committee. A copy of the report will be made available to the student.

6. The date for submission of the thesis should be no later than the end of the second year in the program.

7. At least seven working days prior to the defense date, the student shall provide identical copies of the thesis to all four members of the thesis committee and one copy to the Assistant Chair for Graduate Studies who will make it available to the Faculty for review.

8. The thesis defense should:
   a. start with a brief introduction by the thesis director,
   b. continue with a seminar-like presentation by the student: it should at least summarize the thesis work with particular and clear emphasis of the student's contribution to the subject, be finished with a question-and-answer period,
   c. and be followed with a short session in which only faculty will be present. During this period, general comments will be heard from non-thesis committee members concerning the thesis and its defense.
   d. In the following session with the student and the thesis committee, additional questions will be asked; the Assistant Chair for Graduate Studies may be present as an observer. Note: During parts (b) and (d) of the thesis defense, all questions except those posed directly to others or those that go beyond the scope of the thesis work should be answered by the student.
   e. The thesis defense ends with a meeting in which the thesis committee will decide on the result of the defense to pass this information to the student with suggestions, if any, for corrections to the written copy of the thesis.

9. All corrections should be accommodated in the final version of the thesis to the satisfaction of those members of the thesis committee who made the particular suggestions; only then will the thesis be signed by the thesis director and Chairman of the Physics Department.

10. Two copies of the thesis abstract must be prepared and delivered, with the properly signed thesis, to the Dean of the Graduate School.

NOTE: A student desiring to graduate in a given semester (including summer semesters) shall adhere to all Graduate School regulations and shall schedule his/her thesis defense at least two weeks prior to the Graduate School thesis submission deadline for that semester.

Appendix 3a Physics Department PhD Dissertation Policy

Time lines incorporated in the text below assume that a student enters the PhD program with a Master's degree, and requires no additional pre-requisites in physics. For those students entering the program with a Baccalaureate degree the guidelines for the first two years of PhD study are provided in the curriculum portion of the Graduate Student Handbook describing the MS program.

1. The dissertation may be on any research topic related to the application of physics in biology and/or medicine. References in the dissertation should follow the style of articles in journals published by the American Institute of Physics, or a journal appropriate to the subfield of the research, i.e., Radiation Research, Physics in Medicine and Biology, Journals of the IEEE, etc. The format of the dissertation must meet the requirements of the Graduate School of East Carolina University.
2. The student should take the PhD Candidacy examination at the first opportunity, generally this is given during the first month of each semester.
3. <u>By the sixth week of the second semester</u>, the student should submit to the Assistant Chair for Graduate Studies the name of his/her dissertation director and the general topic of the area of research to be conducted for the PhD dissertation. The student is advised to conduct preliminary research for the preparation of a dissertation proposal under the supervision of the dissertation director.
4. An advisory committee, composed of 4 members in addition to the dissertation director, is to be selected by the student with the consent of the dissertation director and the Assistant Chair for Graduate Studies, and submitted to the PhD executive Committee for approval. The composition of the dissertation committee should include a minimum of three persons from the Graduate Faculty of the ECU Department of Physics and at least one person from outside of the department. The advisory committee should be formed and approved by the end of the second semester.
5. The proposal outlining the work to be performed for the dissertation research must be written in NIH format (Appendix 3b), submitted to the advisory committee, and presented orally to his/her advisory committee members; this presentation is open to the public. Approval of the proposed work is the responsibility of the student's advisory committee. An extra copy of the proposal should be placed in the Office of the Department of Physics one week before the scheduled defense for review by faculty members. The defense and approval of the dissertation proposal should be completed by the end of the third semester
6. <u>By the eighth week of each semester</u> following approval of the dissertation proposal, the student shall orally present an informal half-hour progress report to the advisory committee. After the first presentation to the advisory committee, these presentations shall be open to all interested people. Following each presentation, the dissertation director will submit a report <u>on the progress made in the proposed work</u> to the PhD Executive Committee. A copy of the report will be made available to the student.
7. <u>At least 7 working days prior to the dissertation defense date</u>, the student should provide identical draft copies of the dissertation to all members of the advisory committee and one copy to the Assistant Chair for Graduate Studies who will place it in the Physics Office for review by physics faculty and students. At this time, an announcement of the date and topic of the defense will be made to all faculty and students of the Departments of Physics, Radiation Oncology, Physiology, and to any other departments deemed appropriate by the student, or his dissertation director. The defense of the dissertation is open to the public and the decision on the acceptability of the dissertation is the responsibility of the student's advisory committee.
8. The dissertation defense should:
    a. begin with a brief introduction by the dissertation director,

b. continue with a presentation by the student: the student should summarize the research work with particular and clear emphasis of the student's contribution to the subject.
c. This is followed by a session involving only faculty who can present specific questions or provide general comments regarding the research work and the dissertation.
d. This is followed by a session with the student and the advisory committee where additional questions may be asked; the Assistant Chair for Graduate Studies may be present as an observer.
e. The thesis defense ends with a meeting of the advisory committee who will decide on the success of the defense and what suggestions or corrections, if any, are to be included in the final dissertation.

9. Because of possible variations in the requirements of the Graduate School regarding the style, and format of the dissertation, the student is urged to contact the appropriate official (Dean, or associate Dean) for updated information on the requirements before he/she starts to prepare the manuscript.
10. Any exceptions to the above guidelines and/or requests for time extensions must be submitted by the student and his/her dissertation director in writing to the PhD Executive Committee in advance for approval. Failure to adhere to the deadlines without prior approval can lead to loss of financial support and other disciplinary actions against the student.

Appendix 3b: Instructions for Preparing the Dissertation Proposal

Once you have selected your dissertation committee and your area of research has been approved, the next step in the dissertation process is to complete and present a proposal for research. The format to be followed in the proposal is the same as that used for NIH grants for the U.S. Department of Health and Human Services, Public Health Service**, (**Grant Application PHS 398*). Excepts are included here, but more detailed information can be found at: http://grants2.nih.gov/grants/funding/phs398/phs398.doc

REMINDERS

- Prepare a succinct Research Plan. There is no requirement for applicants to use the maximum allowable pages allotted to the Research Plan (Items A-D). The remaining sections (E-J) of the Research Plan have no maximum allowable pages, but should be succinct.
- Use a font size of 11 or larger, single or double space lines.
- Use English and avoid jargon.
- If terms are not universally known, spell out the term the first time it is used and note the appropriate abbreviation in parentheses. The abbreviation may be used thereafter.

PROPOSAL CONTENT:

THE PARTS OF A PROPERLY PREPARED PROPOSAL ARE AS FOLLOWS IN THE ORDER GIVEN: PROJECT SUMMARY, TABLE OF CONTENTS, RESOURCES, RESEARCH PLAN, LITERATURE CITED, APPENDIX. SPECIFIC INFORMATION FOR EACH SECTION IS GIVEN BELOW.

Project Summary and Relevance

The first and major component of the Description is a **Project Summary**. It is meant to serve as a succinct and accurate description of the proposed work when separated from the application. State the application's broad, long-term objectives and specific aims, making reference to the health relatedness of the project (i.e., relevance to the **mission of the agency**). Describe concisely the research design and methods for achieving the stated goals. This section should be informative to other persons working in the same or related fields and insofar as possible understandable to a scientifically or technically literate reader. Avoid describing past accomplishments and the use of the first person.

The second component of the Description is **Relevance**. Using no more than two or three sentences, describe the relevance of this research to **public** health. In this section, be succinct and use plain language that can be understood by a general, lay audience.

Table of Contents

Resources

State where the work will be performed and what special resources are available to assure that the work can be done successfully.

Research Plan

The PHS recommends the following format and page distribution. Organize *Items a-d* of the Research Plan to answer these questions: *What do you intend to do? Why is the work important? What has already been done? How are you going to do the work?*

The Research Plan should include sufficient information needed for evaluation of the project, independent of any other document. The format for preparing this section is provided below. Be specific, informative, and avoid redundancies. For grant writing tips, see http://grants.nih.gov/grants/grant_tips.htm.

Page Limitations: Do not exceed 25 pages for *Items A-D*. All tables, graphs, figures, diagrams, and charts must be included within the 25-page limit. Be succinct and remember that there is no requirement to use all 25-pages allotted to *Items A-D* of the Research Plan.

A. SPECIFIC AIMS
B. BACKGROUND AND SIGNIFICANCE
C. PRELIMINARY STUDIES/PROGRESS REPORT
D. RESEARCH DESIGN AND METHODS
E. HUMAN SUBJECTS RESEARCH (IF APPLICABLE)
F. VERTEBRATE ANIMALS (IF APPLICABLE)

Literature Cited.

List all references. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication in a style accepted by publishers in the scientific field of the applicant.

See example at: http://www.niaid.nih.gov/ncn/grants/app/app.pdf

The references should be limited to relevant and current literature. While there is not a page limitation, it is important to be concise and to select only those literature references pertinent to the research proposal

Final Step

After distribution to, and approval by, your dissertation committee, submit the proposal to the Vice-Chair for Graduate Studies who will then schedule an oral defense of the proposal.

*Instructions for PHS 398 on Form Approved Through 09/30/2007. Last revision 09/2004. Form OMB No. 0925-0001

Appendix 4 Policy on Satisfaction of Research Skill Requirements in a Computer Language

(5/1/87, revised 1/6/2006)

A declaration of how the student expects to satisfy the Research Skill Requirement in a computer language will be required upon entry into the program.

Satisfactory knowledge of a computer language may be demonstrated in any one of the following ways:

1. Satisfactory completion of PHYS 5900/5901.
2. Satisfactory completion of courses, such as, CSCI 2610 or equivalent.
3. Evidence of the use of a computer language in research or course projects at a level comparable to CSCI 2610.
4. Satisfactory performance on an exam in which the student is asked to convert an algorithm to a program in an acceptable computer language. This exam will be drafted by the departmental computer committee.

Satisfactory completion of this requirement will be judged by the Graduate Committee

Appendix 5 Miscellaneous University Policies and General Information

The following policies are quoted from communications of the Graduate School, the Graduate School Advisory Board, the Graduate Assembly, etc …

ECU GRADUATE SCHOOL: POLICIES FOR GRADUATE ASSISTANTSHIPS AND FELLOWSHIPS. AWARDS AND ASSIGNMENTS

Assistantships may only be awarded to graduate students enrolled in on-campus programs that lead to a graduate degree at East Carolina University. At a unit's discretion, graduate intern assistantships or off-campus students enrolled in off-campus programs may receive graduate assistantships with unit funds; however, they may not be supported with Graduate School funds. Assistantship eligibility does not extend to students who have been admitted by exception, non-degree seeking students, or undergraduates.

A full time graduate assistantship (20 hours per week - fall and spring semesters) will be worth a minimum of $7,500. Graduate assistants should not work more than twenty hours per week during the academic year. Graduate assistants are limited to thirty hours per week in the fall and spring semesters in any combination of appointments – GIA/GRA/GTA, self-help, College Work Study, EPA/SPA. **Foreign students are limited to twenty hours per week, no exceptions** (this is a federal requirement). During first and second summer sessions, all graduate students (domestic or foreign) are limited to thirty-eight hours per week.

Requests for exceptions to the 30-hour rule must be made via petition to Dean of the Graduate School. All requests must state the following: Student's name and Banner ID, where they are in their program of study, e.g., 1st semester, 2nd year, etc., what impact working more than 30 hours a week will have upon their graduation, why this request is necessary, a summary of the job's responsibilities and list any other options that have been considered prior to making the request.

Assistantship funds will be allocated based upon each unit's established rate. Units may opt to pay their assistants at a higher rate per F.T.E. if they deem it appropriate, by using one source or multiple sources of funds. **Employees at other state agencies may not hold a graduate assistantship.**

Students are ineligible for assistantships if they are not registered by census day. Census day is defined as the day that enrollment is captured and, concurrently, how ECU's funding is awarded. A good rule of thumb to follow is to make sure that anyone on an assistantship is registered on or before the last day to add classes each semester.

In order for graduate assistants to be exempt from FICA tax, they must have a minimum registration of 4 hours for the fall and spring semesters and 3 hours in the summer. If the GA is registered for less than the stated hours FICA will be withheld. Departments paying students from sources other than state appropriated dollars should note that the university's portion of the FICA (7.65%) will be taken from the funding source used to pay the assistantship and should therefore budget accordingly.

Students in master's programs should not receive assistantship support for more than five semesters (excluding summer sessions). Students in doctoral programs should not receive assistantship support for more than ten semesters (excluding summer sessions).

Teaching assistants assigned primary responsibility for the administration, instruction, and evaluation of students enrolled in courses must have satisfactorily completed a minimum of 18 semester hours of graduate course work in the field in which instruction is given (SACS 18-hour rule). They must also receive in-service training, be under the direct supervision of an experienced faculty member in the field, and be evaluated **each**semester. The Graduate School requires units to submit a request for exception to hiring non-degree or undergraduate teaching assistants when using funds awarded to them via the Graduate School. The unit should submit an e-mail request to the Dean of the Graduate School requesting the exception and stating that the student has the qualifications for admission to the program and will be admitted. The request should also state whether or not the student meets the 18 hour rule (if they are responsible for a class) and that they are being trained and monitored. Units utilizing their own funding, e.g., operating dollars, unexpended faculty salary dollars, grants, do not need to request exceptions.

Departments must issue a signed assistantship/fellowship agreement for each graduate assistant or fellowship recipient – (Revised August 2004). For teaching assistants the agreement must state what course(s) they are teaching, name the individual responsible for the course, name of the supervising faculty, state that the TA has been/will be trained, will be monitored and evaluated, and name the individual responsible for the evaluation. All other assistantship agreements must briefly describe the GA's duties using the descriptions listed in the Graduate Assistant Categories and include the name of the supervising faculty. **It is necessary that all units hiring graduate assistants have a copy of the completed agreement in the student's personnel file and forward a copy of the signed contract to the Graduate School office by Census Day.**

Revised December 11, 2009

Annual Evaluation of PhD Students

(Graduate School Administrative Board, February 25, 2002)

All doctoral programs are required to annually evaluate each student's progress toward their degree. The evaluation will minimally include:

(1) a written statement by the student indicating his/her accomplishments during the past academic year
(2) a written evaluation of the student's progress completed by the major professor
(3) a statement indicating the major professor has discussed the evaluation with the student
(4) an appeal process if the student disagrees with the evaluation.

Implementation Procedures for the Department of Physics (effective Fall, 2006)

- All graduate students will be notified in September that a written statement by the student of **their** evaluation of progress toward degree **must be provided** to the DGSP **by November 1**.
- Each major professor mentoring a student (e.g., Thesis Director) will be notified in September that he/she **must provide a written evaluation** of the student's progress toward degree to the DGSP **by November 1**.
- A meeting of the student, his/her advisor, and the Assistant Chair for Graduate Studies will be held prior to the end of the fall semester. Following this meeting, a report of the student's progress will be prepared and submitted to the Graduate Committee and

the PhD committee for review prior to the start of the spring semester. A copy will be placed in the student's official record.

These evaluations will be reviewed by the Graduate Committee and the PhD Executive Committee and used as a basis for continuation of the financial support to the respective students. A poor recommendation does not require termination of financial support, since many factors may be involved. Any decisions by the graduate committees, or any evaluation of a student to which he/she disagrees can be appealed by the student to the PhD Executive Committee and a re-evaluated can be mandated by a concurring vote of four of that five-member committee.

Any decision to terminate financial support to a student must be provided to the student in writing by January 15. This support can then only be terminated at the end of that current academic year.

The "essence" of this policy is that a student for the doctoral program is "guaranteed" two years of support once admitted to the program, but any successive year support is based on an evaluation of past performance. This results because first year students can be evaluated only on the basis of class registration and performance to November 1. This timing is necessary, however, because funding decisions must be made by January in order to make recruiting decisions for the fall of the following year.

The following policies are quoted from the updated 2009-2010 Graduate Catalogue. The updated Graduate Catalogue is available online.

Official Withdrawal

When a graduate student drops all courses in a semester in which he or she is enrolled the student must officially withdraw. Students registered on campus must apply for official withdrawal to the Office of Registrar. Students registered through Continuing Studies must apply for withdrawal to the Office of Student Services in the Division of Continuing Studies. Students withdrawing for medical/counseling reasons should complete the procedure within thirty days after the last class attendance. All other students withdrawing should complete this procedure immediately after the last class attendance. After classes have ended, no withdrawal, except in the case of severe medical emergency, can be filed. A graduate student withdrawing by the last day for graduate students to drop courses without grades as given in the Graduate School calendar will not receive grades for the semester. A graduate student withdrawing from school after the last day for graduate students to drop courses without grades shall receive a grade of F for all classes which he or she is failing at the time unless, in the judgment of the dean of the Graduate School, the failures were caused by circumstances beyond the student's control.

Leave of Absence and Readmission

Students enrolled in graduate degree programs who take a leave of absence of one or more semesters (excluding summer terms) must notify their graduate program director and file a readmission application prior to returning. During a leave of absence students will not be permitted to utilize university resources.

Students who take a leave of less than three years may file an application for readmission online at www.ecu.edu/gradschool/. There is no fee for readmission. These applications should be presented to the Graduate School at least one week prior to the opening of registration for the semester or summer term in which the student wishes to resume graduate work. Students wishing to change graduate degree or certificate programs after a leave of absence must submit a new admissions application.

Students who take a leave of absence of three or more years must submit a new complete application to be considered for admission to their former program or any other graduate program within the university. Students readmitted after a leave of absence of three years or more will be required to meet new or changed degree requirements. East Carolina University course credit will be evaluated for applicability towards degree requirements in accordance with established time limits.

For information on time limitations, view *Residence and Graduate Requirements* found at www.ecu.edu/cs-acad/grcat/regulations.cfm#resreqmts.

Readmission Following Academic Dismissal

A student dismissed from the Graduate School for poor academic performance must wait one year (including summers) before being considered for readmission. A new complete application will be required for readmission. If the student is accepted for readmission in the same graduate program, credits earned while previously enrolled will be included for the purpose of determining academic standing and meeting graduation requirements. If the student is accepted into a different program, grades and credits earned in the previous degree program from which student was dismissed will not be included for the purpose of determining academic standing and graduation in the new program; however, the student's transcript will show all courses and grades including those earned in the previous program.

For information on probation and dismissal, view the *Probation and Termination Policy* found at www.ecu.edu/cs-acad/grcat/regulations.cfm#resreqmts.

Course Attendance

Course attendance is expected of all students. Faculty members have the right to establish attendance and participation requirements in each of their courses. Course requirements (e.g., examinations, oral presentations, laboratory experiments, participation in discussion) are in no sense waived due to absence from class. Instructors may establish penalties when excessive absences would seriously hinder achievement in any course. It is the instructor's discretion as to how absences will be handled.

Auditing Courses

Auditing a course consists of attendance at classes and listening, but taking no part in the class. An auditor is not responsible for any assignments, nor is he or she allowed to take any tests or examinations. However, in order to have the audited course recorded on the official transcript, a student must attend classes regularly. An auditor may not enroll in a participation course (art classes, laboratories, etc.). Under no circumstances will a grade be assigned, evaluations be made, or performance reports be issued on a student auditing a course. Auditing a course or part of a course is contingent upon the approval of the instructor and the appropriate departmental chairperson, school director, or college dean. Students may not register to audit a course until the last day of the drop/add period. Persons who wish to attend university classes without earning credit must be admitted to the university before seeking approval to audit any course. The applicants shall complete the prescribed procedure for registering through the Office of the Registrar and pay the audit fee to the cashier's office before attendance in classes is permitted.

Students regularly enrolled in the university wishing to audit course(s) must initiate the approval process with their advisor.

Schedule Changes

A graduate student may add a course or courses through the last day to register for the semester (fall/spring semesters this is the sixth class day). The student must secure appropriate approval from the instructor and or departmental chairperson and contact the Office of the Registrar to have the add processed.

A graduate nondoctoral student may drop a course and receive no grade according to the date given in the Graduate School calendar. The student must notify their program advisor of the drop and contact the Office of the Registrar to have the drop processed. An e-mail from the advisor or the advisor's signature on a drop form indicates awareness of the change. **A student who drops a course after the last day for graduate students to drop a class without a grade will receive a final grade of F.** Students that experience a medical emergency or other emergency of such a serious nature that it is impossible or extraordinarily difficult to withdraw prior to the last day to drop a course must obtain permission from the Dean of the Graduate School. If it is determined that such an emergency existed, approval will be given for the student to be withdrawn from all courses taken during that semester. As a matter of policy it is not possible to select and retroactively drop individual courses.

Doctoral students may drop courses only with permission of their departmental chairperson or graduate committees.

No course is officially dropped or added until all appropriate approvals are obtained from the advisor and/or the Graduate School and the required procedure is completed with the Office of the Registrar.

Change of Grade

A change of grade, other than I, for any reason, must be made within one year from the date the original grade was received.

Graduate Student Grade Appeals

The goal of this grade appeal policy is to establish a clear, fair process by which graduate students can contest a course grade that they believe has been awarded in a manner inconsistent with university policies or that has resulted from calculation errors on the part of the instructor. Recognizing, however, that the evaluation of student performance is based upon the professional judgment of instructors, and not withstanding the exceptions noted at the end of this policy, appeals will not be considered unless based upon one or more of the following factors:

- An error was made in grade computation.
- Standards different from those established in written department, school or college policies, if specific policies exist, were used in assigning the grade.
- The instructor departed substantially from his or her previously articulated, written standards, without notifying students, in determining the grade.

Only the final course grade may be appealed. The grade assigned by the instructor is assumed to be correct and the student appealing the grade must justify the need for a change of the grade assigned.

Appeals Procedure

1. Formal grade appeals must be initiated by the student by the end of the twenty-first calendar day of the semester (not including summer sessions) following the award of the grade.
2. The first step to resolve differences between an instructor and student concerning a grade should be a discussion with the instructor. If the instructor of record will not be

available within one semester (not including summer sessions), the department chair or designee may act in lieu of the instructor of record for the purpose of grade appeals.

3. If the instructor and student cannot resolve the appeal, and the student wishes to pursue the matter further, he or she must present to the chair of the department or designee in which the course is offered, a written appeal that includes the following:
    - A statement addressing how the appeal meets one or more of the three criteria necessary for a formal appeal.
    - A description of the outcome of the informal discussion process.
    - Any relevant documents the student would like to be reviewed as part of the appeal process.
    - A copy of the course syllabus and assignment descriptions.

    The department chair or designee may request additional materials from the student. After receiving a copy of the appeal materials from the department chair or designee, the instructor has fourteen calendar days to respond in writing to the appeal. The department chair or designee will discuss this response with the faculty member and will provide the student with written notification of the outcome of this step within seven calendar days after receiving the instructor's response.
4. If there is no mutually agreed upon resolution between the student and the instructor, and the student wishes to pursue the matter further, he or she has seven calendar days to submit his or her written appeal to the college dean or designee. The college dean or designee will review the appeal, provide copies of all appeal materials to the instructor, and discuss the appeal with both the instructor and the student. The instructor has seven days to review the written appeal the student has presented to the dean and, if desired, prepare an additional written response. The college dean or designee will provide the student with written notification of the result of this step within fourteen calendar days after receipt of the appeal from the student.
5. If step 4 does not lead to a mutually agreeable resolution between the student and the instructor, and the student wishes to pursue the matter further, then a Grade Appeal Committee shall be formed by the dean of the school or college in which the program resides within ten calendar days. This committee shall include five graduate faculty members from the college: one selected by the student, one selected by the instructor of record, and one appointed by the dean of the Graduate School, and two appointed by the dean of the school or college in which the program resides. A majority shall prevail in the committee. The Committee shall elect its own chair. The function of the Grade Appeal Committee shall be to evaluate the appeal in terms of the stated grounds for the appeal. The Committee's decision may be to keep the assigned grade or to raise the assigned grade. The Committee shall provide a written justification to the deans of the academic school or college and the Graduate School for its decision, including minority opinions when they exist, no later than twenty-one calendar days after the Committee's formation. The college dean shall inform the student and the instructor of the Committee's decision and provide both parties with copies of the committee report.
6. In the case of a change of grade, if the instructor of record does not implement the change of grade decided upon by the Committee within ten calendar days after learning of the Committee's decision, the dean shall implement the change of grade as determined by the Committee on the student's official transcript through the change of

grade procedure. This shall be the last step in the deliberation of the formal grade appeal.

7. The dean of the Graduate School shall forward a written record of the results of all grade appeals to the appropriate vice chancellor within fourteen calendar days. The dean of the Graduate School shall also provide an annual summary to the Graduate School Administrative Board of the number of cases heard and the aggregate result of the process.

Exceptions to the Grade Appeal Policy

The Grade Appeal Policy shall constitute the sole internal administrative remedy for a change in grade, except when the grade being disputed resulted from an alleged academic integrity violation or when a grade dispute involves an Office of Equal Opportunity and Equity discrimination complaint. If a grade dispute arises from an issue that is covered under the university's Academic Integrity Policy, the process for resolution that has been established for appealing academic integrity violations must be followed. If a grade dispute arises from an issue that is covered under the university's Equal Opportunity and Equity policies, the process for resolution that the Office of Equal Opportunity and Equity has established must be completed prior to the use of the university's grade appeal process.

Probation and Termination Policy

In order to remain in good academic standing, graduate students must maintain a minimum cumulative GPA of 3.0 once they have a total of 9 credit hours attempted* and any additional or higher academic standards established by their program of study. Students who fail to meet their program's criteria may be placed on probation or dismissed from the program.

Students who fail to remain in good academic standing in accordance with the paragraph above, will be automatically placed on academic probation by the Graduate School, during which time they will have an opportunity to correct their academic deficiencies. The probationary period will last for the term(s) in which the next nine credit hours are attempted. Enrollment in the Graduate School will be automatically terminated for students who fail to correct their academic deficiencies by the end of the probationary period. Graduate students will not be allowed to take classes once it becomes mathematically impossible to achieve an overall cumulative GPA of 3.00 by the end of the remaining probationary period.

Students may appeal dismissal decisions by following the process outlined in the Graduate School Appeals Procedure.

*Total credit hours attempted is the sum of credit hours for all graduate courses in which a graduate student is enrolled as of the tenth day of each semester (the Official University Enrollment Report Date or "Census Date"). Courses with a grade of "I" (incomplete) or dropped after census date are included in the calculation of credit hours attempted. Thesis and dissertation courses are not included as they may be repeated multiple times and no grade is assigned until the thesis or dissertation is defended.

Continuous Enrollment (or Registration)

Graduate students who have previously registered for all credits in a graduate degree program but who have not completed all requirements (e.g., thesis, professional paper, internship, etc.) must continue to register each semester (except summer terms) until all degree re-

quirements are completed and filed with the registrar. Students must be enrolled for at least one credit hour during the semester of graduation except summer, if registered for the prior spring semester. Students may request a leave of absence for special circumstances, but are not permitted to use university resources during the period of their leave of absence. Students may petition the Graduate School for an exception to the continuous registration requirement if all degree requirements are completed prior to the first day of class in the next term.

For information on leave of absence, view *Absence and Readmission* found at www.ecu.edu/cs-acad/grcat/admission.cfm#LOAReadmit.

Time Limitations

The time limit for completing all credit (including transfer credit) in nondoctoral programs is six years (except for the master of science in social work which is limited to four years for full- and part-time students). College, school, and departmental petitions for time extensions for completion of degrees will be reviewed and acted upon by the Graduate School. The Graduate School is empowered to establish the length of time for extensions that are granted and to specify the conditions governing time extensions that student petitioners must meet. No program content over 10 years old can be applied toward a graduate degree.

Students in the EdD program must complete their course work in six years. An extension may be granted with the approval of the faculty of the Department of Educational Leadership and the Graduate School.

For information about PhD program time limitations view *Curricula* found at www.ecu.edu/cs-acad/grcat/curricula.cfm.

Application for Graduation

Application for graduation must be made on a form provided by the registrar at least one semester prior to completion of the requirements of the degree. Students who complete the degree requirements after the last day of final exams in the intended term of graduation will be certified for graduation in a subsequent term.

Financial Assistance

General Information

Because of the early publication of this catalog, the tuition and fee schedule is omitted. The current university schedule of tuition and fees can be obtained from the cashier's office, the admissions office, or at www.ecu.edu/cs-admin/financial_serv/cashier/tufee.cfm.

It is estimated that the average graduate student who is a North Carolina resident incurs necessary expenses of approximately $16,500 for room, meals, tuition, fees, and books during an academic year of two semesters. The costs of meals and textbooks may vary considerably, according to individual requirements. The university operates food service facilities in six locations throughout the campus. Meals are available either under a meal plan or by individual selections at moderate prices. A cost of approximately $1,500 per semester for meals is an estimate. Students are required to purchase their textbooks. For their convenience, the university owns and operates the Student Stores, located on the ground floor of the Wright Building, where all necessary books and supplies may be purchased. The cost of books will vary with the different curricula; $400-$600 per semester is a reasonable estimate.

Residence Status for Tuition Purposes

The basis for determining the appropriate tuition charge rests upon whether a student is a resident or a nonresident for tuition purposes. Each student must make a statement as to the length of his or her residence in North Carolina, with assessment by the institution of that statement to be conditioned by the following:

Residence. To qualify as a resident for tuition purposes, a person must become a legal resident and remain a legal resident for at least 12 months immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, 12 months legal residence means more than simple abode in North Carolina. In particular it means maintaining a domicile (permanent home of indefinite duration) as opposed to "maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education". The burden of establishing facts which justify classification of a student as a resident eligible to in-state tuition rates is on the applicant for such classification, who must show his or her eligibility by the preponderance (the greater part) of the residentiary information.

Initiative. Being classified a resident for tuition purposes is contingent on the student's seeking such status and providing all information that the institution may require in making the determination.

Parents' Domicile. If an individual, irrespective of age, has living parent(s) or court-appointed guardian of the person, the domicile of such parent(s) or guardian is, prima facie, the domicile of the individual; but this prima facie evidence of the individual's domicile may or may not be sustained by other information. Further, nondomiciliary status of parents is not deemed prima facie evidence of the applicant child's status if the applicant has lived (though not necessarily legally resided) in North Carolina for the five years preceding enrollment or re-registration.

Effect of Marriage. Marriage alone does not prevent a person from becoming or continuing to be a resident for tuition purposes, nor does marriage in any circumstances insure that a person will become or continue to be a resident for tuition purposes. Marriage and the legal residence of one's spouse are, however, relevant information in determining residentiary intent. Furthermore, if both a husband and his wife are legal residents of North Carolina and if one of them has been a legal resident longer than the other, then the longer duration may be claimed by either spouse in meeting the twelve-month requirement for in-state tuition status.

Military Personnel. A North Carolinian who serves outside the state in the armed forces does not lose North Carolina domicile simply by reason of such service. And students from the military may prove retention or establishment of residence by reference, as in other cases, to residentiary acts accompanied by residentiary intent. In addition, a separate North Carolina statute affords tuition rate benefits to certain military personnel and their dependents even though not qualifying for the in-state tuition rate by reason of twelve months legal residence in North Carolina. Members of the armed services, while stationed in and concurrently living in North Carolina, may be charged the in-state tuition rate. A dependent relative of a service member stationed in North Carolina is eligible to be charged the in-state tuition rate while the dependent relative is living in North Carolina with the service member and if the dependent relative has met any requirement of the Selective Service System applicable to the dependent relative. These tuition benefits may be enjoyed only if the applicable requirements for admission have been met; these benefits alone do not provide the basis for receiving those derivative benefits under the provisions of the residence classification statute reviewed elsewhere in this summary.

Grace Period. If a person (1) has been a bona fide legal resident of the required duration, (2) has consequently been classified a resident for tuition purposes, and (3) has subsequently lost North Carolina legal residence while enrolled at a public institution of higher education, that person may continue to enjoy the in-state tuition rate for a grace period of twelve months measured from the date on which North Carolina legal residence was lost. If the twelve months period ends during an academic term for which the person is enrolled at a state institution of higher education, the grace period extends, in addition, to the end of that term. The fact of marriage to one who continues domicile outside North Carolina does not by itself cause loss of legal residence, marking the beginning of the grace period.

Minors. Minors (persons under eighteen years of age) usually have the domicile of their parents, but certain special cases are recognized by the residence classification statute in determining residence for tuition purposes.

a) If a minor's parents live apart, the minor's domicile is deemed to be North Carolina for the time period(s) that either parent, as a North Carolina legal resident, may claim and does claim the minor as a tax dependent, even if other law or judicial act assigns the minor's domicile outside North Carolina. A minor thus deemed to be a legal resident will not, upon achieving majority before enrolling at an institution of higher education, lose North Carolina legal residence if that person
    a. upon becoming an adult "acts, to the extent that the person's degree of actual emancipation permits, in a manner consistent with bona fide legal residence in North Carolina" and

b. "begins enrollment at an institution of higher education not later than the fall academic term following completion of education prerequisite to admission at such institution."

b) If a minor has lived for five or more consecutive years with relatives (other than parents) who are domiciled in North Carolina and if the relatives have functioned during this time as if they were personal guardians, the minor will be deemed a resident for tuition purposes for an enrolled term commencing immediately after at least five years in which these circumstances have existed. If under this consideration a minor is deemed to be a resident for tuition purposes immediately prior to his or her eighteenth birthday, that person on achieving majority will be deemed a legal resident of North Carolina of at least twelve months' duration. This provision acts to confer instate tuition status even in the face of other provisions of law to the contrary; however, a person deemed a resident of twelve months' duration pursuant to this provision continues to be a legal resident of the state only so long as he or she does not abandon North Carolina domicile.

Lost But Regained Domicile. If a student ceases enrollment at or graduates from an institution of higher education while classified a resident for tuition purposes and then both abandons and reacquires North Carolina domicile within a twelve month period, that person, if he or she continues to maintain the reacquired domicile into re-enrollment at an institution of higher education, may re-enroll at the in-state tuition rate without having to meet the usual twelve-month durational requirement. However, any one person may receive the benefit of this provision only once.

Change of Status. A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) must be classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual enrollment. A residence status classification once assigned (and finalized pursuant to any appeal properly taken) may be changed thereafter (with corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic year.

Transfer Students. When a student transfers from one North Carolina public institution of higher education to another, he or she is treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence status classification for tuition purposes.

Regulations on Residency: the Manual. University regulations concerning the classification of students by residence, for purposes of applicable tuition differentials, are set forth in detail in *A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes.* Each enrolled student is responsible for knowing the contents of that Manual, which is the controlling administrative statement of policy on this subject. Copies of the Manual are available on request at the undergraduate admissions office, the registrar's office, and the Joyner and Health Sciences Libraries. The Manual is also available online in the residency section of the registrar's home page: http://www.ecu.edu/registrar/.

Deadline for Application. Newly admitted or readmitted graduate students applying for the in-state rate for tuition should complete the Application for In-State Residence and Tuition and return it to the graduate residency classification officer in the Graduate School, at

least three weeks prior to registration day for the semester or term they are seeking in-state tuition.

Fee Payment Schedule

Returning students or those admitted and registering before the collection of fees begins for the fall or spring semesters will be subject to a late payment fee if tuition and fees are not paid by a published deadline, which usually precedes registration day by about two weeks. The academic calendars include the published deadlines and can be accessed online at www.ecu.edu/fsonline/fscalend.htm.

Students will be charged tuition and fees based on admission status.

Tuition and fees are subject to revision by The UNC Board of Governors and/or the ECU Board of Trustees, who reserve the right to revise them at any time found necessary or advisable and without prior notice.

No person is allowed to attend class or receive class instruction without being properly registered either for credit or for audit.

See www.ecu.edu/financial_serv/cashier/tufee.cfm for summer session and continuing studies fees.

Refunding of Tuition and Fees

It is to the financial advantage of all students withdrawing, dropping to part-time status, or dropping to a lower block of credit hours to do so as early in the semester/session as possible. The official withdrawal policy may be found in the academic regulations section of this catalog. Refunds for tuition and required fees (excluding room and board charges which are determined by contractual agreement) will be made as follows for students who withdraw or drop to a lower block of credit hours:

- Through the first week of classes (five class days starting the first official day of classes for the university) tuition and required fees will be refunded at 100 percent.
- The second week of classes (six to ten consecutive class days) tuition and required fees will be refunded at 75 percent minus the $25 nonrefundable processing fee.
- The third week of classes (eleven to fifteen consecutive class days) tuition and required fees will be refunded at 50 percent minus the $25 nonrefundable processing fee.
- The fourth week of classes (sixteen to twenty consecutive class days) tuition and required fees will be refunded at 25 percent minus the $25 nonrefundable processing fee.
- Beginning with the fifth week of classes (twenty-first consecutive class day) refunds will not be considered.

If the student wishes to appeal balances resulting from tuition and fee charges, the process must be initiated in writing to the Tuition Refund Appeals Committee. The written appeal can be submitted to the Center for Academic Services (201 Whichard Building) or via e-mail to cas@ecu.edu.

All refunds are subject to the above noted time limitations and will be based on the difference between the amount paid and the charge for the block of hours for which the student is officially registered.

Policy Exceptions

There will be no refunds for special course fees after the first five class days of each semester.

A separate and extended refund policy exists for first-time federal Title IV financial aid recipients. Refer to financial aid materials or contact the Office of Student Financial Aid.

To officially withdraw from the university, a student must give written notice to the Office of the Registrar. Distance education students should send electronic notification to DEDrops@ecu.edu from their ECU e-mail account.

Any refunds that a student is entitled to shall first be applied to outstanding financial obligations owed the university.

Appendix 6
Final Review of Theses and Dissertations Prior to Acceptance by the Graduate School

1. Background:

The "Manual of Basic Requirements for Theses and Dissertations" (August 1991, 3rd ed.) as prepared by the members of the Graduate Faculty specifies that "…theses or dissertations that do not follow the form prescribed in this manual will not be accepted by the dean of the Graduate School." Furthermore the manual specifies that theses and dissertations are subject to a "complete review" by the Graduate School.

2. Major Review Points:

The following are the major reasons that theses and dissertations are not initially accepted by the Graduate School:

a. Improper format of abstract.
b. Improper margins in any part of the thesis or dissertation.
c. Improper pagination (especially in the prefatory material).
d. Incorrect pagination listed in the Table of Contents.
e. Inconsistent hierarchy of organization from section to section. The same level of organization should be treated consistently as to indentation, underlining, fonts, bold lettering, alphanumeric denotations (ex. A,b,I,1) etc.
f. Inconsistent hierarchy of organization between that listed in the Table of Contents and found in the text.
g. Inconsistent use of fonts.
h. Prefatory material missing List of Tables, List of Figures, etc. Also table/ figure titles are not included in the List of Tables, Figures etc. or they have incorrect pagination.
i. Incomplete references (Text referrals are not cited in the bibliography/references section).
j. Inconsistent style in citing the references in both the text and the bibliography/references section.
k. Improper grammar and/or misspellings (to a lesser extent).

Although all theses and dissertations must comply with the "Manual of Basic Requirements ....," the Graduate School strongly suggests that each program decide upon a particular style or format which all of their theses or dissertations will follow beyond that described in the "Manual of Basic Requirements..." This format may be either a specific style manual (i.e. APA, Turabian, MLA) or the format of some respected journal in the field.

More information about the required styles and elements for the electronic submission of theses and dissertations can be found on the Graduate School web site (see e.g., http://www.ecu.edu/cs-acad/gradschool/ETD.cfm).

Appendix 7 Graduate Faculty Listing

Martin Bier, Associate Professor, Tel.328-6428 bierm@ecu.edu

Membrane biophysics, Energy conversion in proteins and nanotechnological constructions, Brownian and non-Brownian fluctuations in microscopic systems

George Bissinger, Professor Emeritus, Tel: 328-1860 bissingerg@ecu.edu

Computer simulation and experimental measurement of acoustic radiation from violin using mode analysis; experimental atomic physics.

Orville W. Day Jr., Associate Professor, Tel: 328-4228 dayo@ecu.edu

Quantum mechanics of atoms and molecules including one-electron amplitudes, energies and occupancies; distribution of energy within an atomic or molecular system; density functional theory.

Michael Dingfelder, Associate Professor, Tel:328-0882 dingfelderm@ecu.edu

Theoretical atomic physics; interaction of charged particles with matter; radiation physics, modeling and Monte Carlo simulation of radiation transport and radiation damage in biological relevant systems;

Xin-Hua Hu, Professor, Tel: 328-1864 hux@ecu.edu

Interaction between short laser pulses and biological tissues and cells; coherent imaging of turbid medium.

James M. Joyce, Professor, Tel: 328-6739 joycej@ecu.edu

Electrical activity of the stomach; biological physics of membrane; development of medical devices; atomic and nuclear physics.

Edson L. B. Justiniano, Associate Professor, Tel: 328-1855 justinianoe@cu.edu

Experimental atomic physics, ion-atom collisions, charge transfer, recombination and excitation in electron-ion collisions, laser assisted electron-ion and ion-atom collisions.

Ruth Kempf, Professor, Tel: 328-4981 kempfr@ecu.edu

Physical and radioanalytical chemistry, international and domestic safeguards, national security, international arms control and nonproliferation, scientific and technical management.

John Kenney, Associate Professor, Tel: 328-2028 kenneyj@ecu.edu

Fibril, amyloid-like structures - synuclein, spider silk and PAI-1 serpins; hexagonal bilayers of giant haemoglobins; development and use a broad application of different imaging and spectroscopic techniques, principally transmission electron microscopy (TEM) and synchrotron radiation circular dichroism.

Gregory Lapicki, Professor, Tel: 328-6894 lapickig@ecu.edu

Theoretical atomic physics: atomic collisions, penetration of charged particles through matter, inner-shell ionization and stopping power problems.

Yong-qing Li, Associate Professor,Tel: 328-1858 liy@ecu.edu

Optical biosensors; interactions between light fields and biological systems; optical heterodyne detection; quantum optics and atomic physics.

Zi-Wei Lin, Assistant Professor, Tel: 328-2941 linz@ecu.edu

Space radiation physics for protection os astronauts and electronic equipment in space, biomedical appliations of radiation transport models, development and application of Monte Carlo transport models for relastistic heavy ion collisions.

Jun Qing Lu, Associate Professor, Tel: 328-1856 luj@ecu.edu

Theoretical condensed matter physics on light scattering from random media; biomedical physics on characterization of inhomogeneity in tissue using non-contact laser speckle techniques.

Edward J. Seykora, Professor, Tel: 328-6429 seykorae@ecu.edu

Solar physics and atmospheric physics relating to high resolution optical imaging of the solar disc through the earth's atmosphere.

Jefferson L. Shinpaugh, Professor, Tel: 328-1852 shinpaughj@ecu.edu

Experimental atomic physics on atomic collision processes and atomic structure; application of atomic physics to biological physics and trace element analysis.

Mark W. Sprague, Associate Professor, Tel: 328-1862 spraguem@ecu.edu

Atmospheric and underwater acoustics; computational studies of convective effects on sound propagation; acoustic characterization of Sciaenid fish calls.

John Sutherland, Professor and Chair, Tel: 328-6739 sutherlandj@ecu.edu

Optical physics, spectroscopy, biophysics, development and use a broad application of different imaging and spectroscopic techniques, including synchrotron radiation, circular dichroism, and time-resolved fluorescence spectroscopy.

Larry H. Toburen, Professor emeritus, toburenl@ecu.edu

Measurement of cross sections for collisions involving ions and neutral particles; application of cross section data in the Monte Carlo modeling of charged particle track structure; electron transport in condensed matter; trace element analysis of archeological, biological, environmental, and medical specimens.

Appendix 8 Establishing NC Resident Status

The following information is for incoming graduate students who are not residents of North Carolina and who intend to take up residence in the state. It is provided solely to clarify section 4 of the graduate catalog: "Residence Status for Tuition Purposes."

Two inquiries are made of students enrolled in North Carolina universities and colleges who desire to be classified as in-state students for tuition purposes; first, students must demonstrate that they have in fact lived in North Carolina for a minimum of twelve months immediately prior to enrollment or re-enrollment; and second, students must be able to demonstrate that their presence in the state constituted legal residence.

Under North Carolina law, legal residence means more than simply living in the state. More specifically, it means maintaining a domicile (permanent home of indefinite duration) as opposed to a temporary residence incident to enrollment in a university, college or technical institute of the state. As a starting point, it a student has living parents, the domicile of the student is presumed to be that of his/her parents but may be changed to qualify for in-state tuition if other requirements for residence can be demonstrated. It should also be realized that marriage does not prevent a student from becoming a legal resident for tuition purposes, nor does marriage ensure that a person will become such a resident.

The individual seeking to become a North Carolina resident must demonstrate that he/she is financially independent of parent(s) or guardian if the parent(s) or guardian are non- residents of North Carolina and demonstrate a visible means of support substantiating the claim of financial independence. If the individual has not been entirely self-supporting during the last 24 months, a completed affidavit may be required from the parent(s) to indicate the amount of support provided.

Further and equally important, once the intent and financial independence have been clearly established, North Carolina residence must be maintained for 12 months immediately prior to the semester in which the in-state status can be made effective.

In order to determine whether any given student has established a legal residence in North Carolina, school admission officials must be able to conclude (from information supplied by the student) that the conduct of the student, taken as a whole, demonstrates his/her intent to make North Carolina a permanent dwelling place.

Residence officials include the following information in reviewing the application. **This is not the only information they consider**. Any changes in this documentation must be completed by the end of the first 10 days of classes to be eligible for consideration in the corresponding term the following year (12 months later).

Driver's License and Car Registration

A. NC Driver's License (or NC Identification Card if student does not drive):

Location: Division of Motor Vehicles, 3400 S. Memorial Drive, Greenville, NC 27858.

Information - 830-3456. [If a student drives but does not own a car or carry insurance, a waiver may be signed at the Driver's License office saying the student will not drive until he/she is insured.]

1. Read booklet on NC driving regulations.
2. Take written driver's test and eye test.
3. Having passed tests, NC license is issued immediately and is good for about 4 years.
4. Driver's license from prior state of residence is taken.

5. Cost - $15.00, payable in cash or check only. No credit cards accepted.
6. Cost of identification card only - $10.00.

B. NC Motor Registration

Location: Rivergate Shopping Center, Greenville, NC 27858, Information: 758-8247

1. Contact insurance company and obtain insurance forms.
2. Take insurance forms, title and a valid registration card from the state of prior registration to closest DMV office to have car registered and title transferred.
3. Obtain permanent license plate and validation stickers.
4. Costs: First-time registration - Minimum $218.00 payable in cash or check only. No credit cards accepted. Take current registration, title (if you own the car) or lien holder information and current insurance information with you. Fee covers plates, title fee, highway use, tax and notary fee. Annual renewal fee – varies; payable in cash only.

Appendix 9 Taxes

There are several tax benefits for higher education in the U.S. tax code. Students should refer directly to the IRS website (http://www.irs.gov) where any forms needed, (1040,1040EZ, and Form 8863 for lifelong learning credit) and the IRS Publication 970: Tax Benefits for Education can be downloaded.

Appendix 10 Forms

In the following some forms are attached. To find the actual form consult the graduate office or the Department of Physics Graduate Program website.