UNIVERSITY OF RHODE ISLAND
THE GRADUATE SCHOOL

To: Members of the 2009-2010 Graduate Council
From: Nasser Zawia, Interim Dean
Date: 17 February 2010
RE: Agenda for Meeting Number 443 of the Graduate Council to be held on Monday 22 February 2010 at 2:00 p.m. in the conference room of the Alumni Center

I. Call to Order
II. Approval of Minutes of Meeting Number 442
III. Announcements
   A. Update on Program Profiles
   B. Status of applications
IV. Committees
   A. Curriculum Committee
      (Curricular material is available at http://www.uri.edu/gsadmis/gradCourseProposals)

   I. 400 – level courses

   New Courses:

   1) College of Engineering

      Department of Electrical, Computer, and Biomedical Engineering

   *ELE 470 Advanced Topics in Computer Engineering (3)
   Application of modern mobile computing platforms, user interface, software application development, hardware interface; view controllers; data interaction; application distribution. Pre: Basic course in C programming; basic course in microcomputers; at least junior standing; permission of instructor.
II. 500/600-level courses

Changes

1) College of Human Science and Services

School of Education

*EDP 613 Intro to Quantitative Research (4) – change in course number (from 625), course name (from Quantitative Analysis in Educational Research) course description, and credits to read: Educational research data are quantitatively analyzed. Data collected during Core Seminar I are analyzed and interpreted. Applications of the general linear model to a variety of research designs and analytic strategies are emphasized. (Lec.3, Rec. 1) Pre: 610, 611, 615, and a course in introductory statistics, or permission of instructor.

2) College of Nursing

*NUR 504 Advanced Pediatric Physical Assessment (2) – change in credits from 1 to 2 (1 didactic, 1 laboratory), change in prerequisite to read: Admission to the graduate nursing program, previous or concurrent enrollment in 503, and permission of instructor.

3) College of Arts and Sciences

School of Education

EDC 920 Workshop For Teachers RITES 1 (1-3) – Grading change to ALL grades. Letter A-F and/or Satisfactory- Unsatisfactory S/U

4) College of the Environment and Life Sciences

Department of Natural Resources Science

NRS 401/501 Foundations of Restoration Ecology (4) – change in credits from 3 to 4, change in catalog description and prerequisite to read: Overview of factors involved with implementing an ecological restoration. Will synthesize the physical, biological and human factors that determine restoration success. (Lec. 3, Lab 1) Pre: NRS 223 or BIO 262, or permission of instructor.
NRS 445/545 Invasive Species Research, Management and Policy (4) – change in credits from 3 to 4, change in catalog and prerequisite to read: Overview of major invasive alien species issues in the research, management, and policy arenas. (Lec. 3, Lab 1) Pre: BIO 262 or NRS 223, or permission of instructor.

New Courses

1) College of Arts and Sciences

Women’s Studies/English

*WMS 590 Special Topics in Women’s Studies (3)
Selected areas of study pertinent to graduate level work in women’s studies. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. Pre: Graduate standing or permission of instructor.

Department of Physics

*PHY 545 Nanotechnology in Imaging and Therapy (3)
Nanomaterials: physical properties, application in drug delivery and diagnostics, nanodevices, nano-oncology. Pre: MTH 244

*PHY 550 Introduction to Radiation Physics and Dosimetry (3)
Basic principles of radiation physics: radioactivity, the physics of ionizing radiation, radiation dosimetry, imaging equipment, radiation therapy equipment and radiation detectors. Pre: PHY 210 or permission of instructor.

*PHY 552 Radiobiology (3)
Basic principles of radiation biology: factors that modify radiation response; linear energy transfer; relative biological effectiveness; tissue radiosensitivity; time-dose and fractionation; radiobiological modeling. Pre: PHY 210 or permission of the instructor.

*PHY 555 Radiation Oncology Practicum (3)
Practical aspects of radiation oncology medical physics: operation of radiotherapy equipment and dose measuring devices; radiation beam measurement techniques; commissioning and quality assurance for clinical radiation equipment. Pre: PHY 550 and PHY 552

*PHY 565 Photomedicine (3)
Interaction of light with matter, use light in diagnostic and treatment of diseases, physical principles of optical imaging with biomedical applications, photodynamic therapy. Pre: PHY 322 and PHY 331 or permission of instructor.

2) College of Engineering
Civil and Environmental Engineering

*CVE 477/577 Environmental Sustainability and Green Engineering (3)
Provide an overview of the impacts in aquatic, terrestrial, atmospheric and built environment created by engineering decisions. Understand the physical, chemical, and biological principles that describe interactions between engineering and the environment. Pre: For CVE 477 Senior standing undergraduate from any engineering program or permission of instructor. For CVE 577 Graduate standing from any graduate engineering program or permission of instructor.

Department of Electrical, Computer, and Biomedical Engineering

*ELE 568 Neural Engineering (3)
Principles and technologies of neuroengineering and clinical applications; brain stimulator, spinal cord stimulation, functional electrical stimulation (FES), neural-machine interface for motor prosthesis control, artificial visual/auditory devices for augmented sensory perception. Pre: Graduate standing in Electrical Engineering or permission of instructor.

3) Graduate School of Oceanography

*OCG 509 Satellite Oceanography (3)
A comprehensive overview of remote sensing of the oceans from space. Topics include electromagnetic radiation in the environment, satellite and sensor characteristics, quantities measured and applications. Grades based on student projects. Pre: One semester of an introductory course in physics, e.g., PHY 111, 112 or 204. Basic knowledge of data analysis, experience with Matlab, IDL, Excel, ArcGIS or similar.

OCG 515 Chemistry of Earth (3)
Analysis of Earth as a geological/chemical/biological system. Fundamentals of geochemistry will be developed within the context of broad Earth science questions: Earth formation, differentiation, and evolution. Pre: CHM 101, 112 and PHY 213 or equivalent.

Matters of Information

- **Consolidation of the Marine Affairs two Master degree programs**
The Department of Marine Affairs is submitting for your approval a change in our graduate program. This change is the result of an ongoing program review by the department. By a unanimous vote, the Department of Marine Affairs approved the attached proposed changes, which will consolidate our two existing Master degree programs into a single degree program.
Proposal: MAF currently offers two Master degree programs, the Master of Arts degree in Marine Affairs (MAF MA) and the Master of Marine Affairs (MAF MMA). The current proposal calls for the consolidation of these degree programs into one program, a Master of Arts in Marine Affairs (MA), and the establishment of two “tracks” within that program. One track represents the existing MAF MA program with the only change being the creation of a non-thesis option in that track. This track is designed for individuals who have recently been awarded a Bachelor’s degree. The second track incorporates the degree requirements of the current MAF MMA program and is specifically designed for individuals with prior relevant work experience or a more extensive educational background. To enter this track, a student must satisfy one of the following conditions: possession of a graduate degree in a related area, possession of a Bachelor’s degree and five years of relevant professional experience, completion of one year at Roger Williams University Law School, or completion of the comprehensive examination in the Oceanography doctoral program. The two tracks share a common core curriculum and overall requirements, but do differ in the level of preparation and background of entering students, which in turn is reflected in the total number of credits required for each track.

Rationale: The Office of Higher Education has proposed consolidating degree programs. This proposal will consolidate degree programs that have the same core curriculum. The main difference between the two existing degrees is that MMA students have fewer course requirements because they are given course credit for prior relevant graduate work or if they have five years of work experience in a maritime area. To get a reduced credit load, a prospective student must have completed a graduate degree in a related field or have completed his or her comprehensive exam in the Oceanography doctoral program or his or her first year at Roger Williams Law School. MMA students take a total of 30 credits while MA students take 45 credits. The other difference is that MMA students take a comprehensive exam and complete a major paper while the MA students complete a thesis. This proposal, however, includes adding an option that allows MA students to take the comprehensive exam and complete a major paper instead of completing a thesis. This change will bring our graduate degree into line with our peer programs around the country. The addition of the non-thesis option will also eliminate this difference between the MMA and MA, leaving the course credit given for other relevant graduate work or work experience as the only difference between the two programs. Because the prior graduate work or work experience are proper substitutes for the additional coursework, there is no reason to distinguish between the degrees and, therefore, awarding a single degree with alternative tracks makes sense. Having two separate degrees is unnecessary and unnecessarily confusing for prospective students. Moreover, a single degree would be easier and more efficient to administer at the departmental, college and university levels.

Implementation: Students currently enrolled in the existing programs and those entering in fall 2010 will be given the option of completing the current programs or transferring to the proposed MAF MA program. No additional resources are required for implementation of the proposed changes and there should be no impact on the library.
Proposal for the consolidation of two Ph.D. programs and four M.S. programs in the College of the Environment and Life Sciences

The College of the Environment and Life Sciences currently offers a broad portfolio of M.S. and Ph.D. programs. This proposal focuses on changes to two of the Ph.D. graduate programs, Biological Sciences and Environmental Sciences, and four of the M.S. graduate degree programs, Biological Sciences; Cell & Molecular Biology; Environmental Sciences; and Fisheries, Animal & Veterinary Science. We propose the following changes to these two Ph.D. and four M.S. degree programs:

- the two existing Ph.D. degree programs, Biological Sciences and Environmental Sciences, would be consolidated to form one interdisciplinary Ph.D. program in Biological & Environmental Sciences (BES-Ph.D.);
- the four existing M.S. degree programs, Biological Sciences; Cell & Molecular Biology; Environmental Sciences; and Fisheries, Animal & Veterinary Science, would be consolidated to form one interdisciplinary M.Sc. program in Biological & Environmental Sciences (BES-MSc);
- both the M.Sc. and Ph.D. Biological & Environmental Sciences (BES) graduate degree programs would have four interdisciplinary areas of specialization – Cell & Molecular Biology (CMB), Integrative & Evolutionary Biology (IEB), Ecology & Ecosystem Sciences (EES), and Environmental & Earth Sciences (EVES).

Rationale. Research-based graduate programs in CELS should be organized on the basis of research and outreach strengths, critical mass of faculty, and common goals of graduate student training. Consolidation of the four M.S. and two Ph.D. programs described above into one interdisciplinary M.Sc., and one interdisciplinary Ph.D. program in Biological & Environmental Sciences, will broaden student perspectives while training them in their specific disciplines, allow students to be part of a larger community of scholars with similar scientific interests, and stimulate interdisciplinary research that generates new knowledge and funding opportunities.

The proposed M.Sc. and Ph.D. programs in Biological & Environmental Sciences include faculty from a diverse set of departments in CELS including Biological Sciences; Cell and Molecular Biology; Fisheries, Animal and Veterinary Science; Geosciences; Natural Resources Science; Nutrition and Food Sciences; and Plant Sciences; as well as faculty from the Graduate School of Oceanography. As such, the BES programs provide an opportunity for faculty to move across the traditional departmental boundaries when conducting their research and training their students; provide more opportunities for interdisciplinary research and graduate programs; allow more flexibility in the administration of graduate education and research within CELS, thus allowing faculty to take advantage of emerging research areas and funding opportunities in a timely and effective manner; and allow faculty participating in a given undergraduate degree program to train graduate students and conduct research in other areas.

Requirements. The program requirements for the M.Sc. and Ph.D. programs in Biological & Environmental Sciences (BES) are based on the M.Sc. and Ph.D. requirements specified by the Graduate Manual and are intended to allow flexibility in the design of individual programs of studies and promote interdisciplinary interactions between the various areas of specialization.
Implementation. The effective date for implementation would be Fall 2010. Students currently enrolled in the existing programs and students entering these programs in the 2010-2011 academic year would be given the option of completing the existing programs or transferring to the Biological & Environmental Sciences M.Sc. and Ph.D. programs. No additional resources are required for the implementation of these programs and there will be no impact on library resources.

Catalog Description of the Graduate Degrees:
**Master of Science (MSc) and Doctor of Philosophy (PhD) in Biological & Environmental Sciences (BES)**
The MSc and PhD in Biological & Environmental Sciences (BES) are interdisciplinary, interdepartmental graduate degrees that involve faculty from a diverse set of departments in CELS including Biological Sciences; Cell & Molecular Biology; Fisheries, Animal & Veterinary Science; Geosciences; Natural Resources Science; Nutrition & Food Sciences; and Plant Sciences, as well as faculty from the Graduate School of Oceanography. Contact information and a list of faculty in each of these departments are provided below. Students accepted into the MSc and PhD degree programs in Biological & Environmental Sciences are organized into graduate specialization groups that include Cell and Molecular Biology (CMB), Integrative and Evolutionary Biology (IEB), Ecology and Ecosystem Sciences (EES), and Environmental and Earth Sciences (EVES). These graduate specialization groups are described in more detail below, along with the admissions and degree requirements for MSc and PhD students in Biological & Environmental Sciences. Prospective students are encouraged to contact individual faculty to learn more about graduate research opportunities.

**Departments in CELS that train graduate students in Biological & Environmental Sciences**

**Biological Sciences** 401.874.2373, [http://www.uri.edu/cels/bio/](http://www.uri.edu/cels/bio/)<br>
**Faculty:** Professor Goldsmith, *chair*; Associate Professor Wilga, *director of graduate studies*. Professors, Bengtson, Bullock, Fastovsky, Kass-Simon, Killingbeck, Koske, A. Roberts, and Webb; Associate Professors Katz, Irvine, Norris, Selbel, and Wilga; Assistant Professors Lane, Preisser, and Thornber; Adjunct Professors Carlton, Deacutis, Fogarty, Henry, Lauder, Sanford, and Schneider; Adjunct Associate Professors Bailey, Cromarty, Ewanchuk, Gemma, Orwig, T. Roberts, and Thursby; Adjunct Assistant Professor Raposa; Professors Emeritus Albert, Beckman, Bibb, Caroselli, Cobb, Costantino, Goertemiller, Goos, Hammen, Harlin, Hauke, Hyland, Lepper, and Twombly; Associate Professor Emeritus Krueger; Research Professors Heppner and Hill.

**Cell and Molecular Biology** 401.874.2201, [http://cels.uri.edu/cmb](http://cels.uri.edu/cmb)<br>
**Faculty:** Professor Sperry, *chair*; Professor Nelson *director of graduate studies*. Professors Chandlee, Cohen, Hufnagel, Kausch, Paquette, and Sun; Associate Professor Martin; Assistant Professors Howlett and Jenkins; Research Professors A. de Groot, L. de Groot, and Spero; Research Assistant Professor Moise; Professors Emeritus Laux and Mottinger.

**Fisheries, Animal and Veterinary Science** 401.874.2477, [http://uri.edu/cels/favs](http://uri.edu/cels/favs)<br>
**Faculty:** Professor Bengtson, *chair*; Professor Gomez-Chiarri, *director of graduate studies*. Professors Bradley, Costa-Pierce, DeAlteris, Mallilo, Rhodes, and Rice; Assistant Professors Peterson and Sartini; Adjunct Professors Hoey, Klein-MacPhee, Musick, Serra, and Smolowitz; Adjunct Associate Professors Colwill and Hare; Adjunct
Assistant Professors Brumbaugh, Castro, Dudzinski, Gleason, Hancock, Leavitt, Rheault, Petersson, Schwartz, and Wetherbee; Professor Emeritus Chang and Reckziek.

**Geosciences** 401.874.2265, [http://uri.edu/cels/geo](http://uri.edu/cels/geo)

Faculty: Associate Professor Veeger, chair; Associate Professor Boving, director of graduate studies. Professor and State Geologist Boothroyd; Professors Cain and Fastovsky; Assistant Professor Savage; Adjunct Professors Burks, Fischer, and Spiegelman.

**Natural Resources Science** 401.874.2495, [http://www.nrs.uri.edu](http://www.nrs.uri.edu)

Faculty: Professor Paton, chair; Professor Golet, director of graduate studies.

Professors Amador, August, Forrester, Gold, Husband, McWilliams, Stolt, and Wang; Assistant Professors F. Meyerson and L. Meyerson; Adjunct Professors Lashomb, Paul, Perez, and Rockwell; Adjunct Associate Professors Abedon, Cerrato, Gorres, Groffman, Jarecki, Nowicki, and O’Connell; Adjunct Assistant Professors Bergondo, Buffum, Dabek, Daehler, Eisenbies, Eldridge, Farnsworth, Gayaldo, Hollister, Kellogg, McKinney, Milstead, Mitchell, Peters, Rubenstein, Saltonstall, Steele, and Tefft.

**Nutrition and Food Sciences** 401.874.2253, [http://cels.uri.edu/nfs/](http://cels.uri.edu/nfs/)

Faculty: Professor English, chair; Professor Greene, director of graduate studies.

Professors Fey-Yensan, Lee, and Patnoad; Associate Professors Gerber and Melanson; Assistant Professor Lofgren; Adjunct Professor Sebelia; Adjunct Associate Professor Pivarnik.

**Plant Sciences** 401.874.2791, [http://www.cels.uri.edu/pls](http://www.cels.uri.edu/pls)

Faculty: Professor Maynard, interim chair; Professor Mather, director of graduate studies. Professors Alm, Casagrande, LeBrun, Rueemmele, and Sullivan; Associate Professors Englander and Mitkowski; Assistant Professor Brown; Professors Emeriti Beckman, Hull, and Jackson; Professor in Residence Ginsberg; Adjunct Assistant Professor Gettman.

**Graduate Specialization Groups**

**Cell and Molecular Biology (CMB):** this graduate research group focuses on the molecular basis of life offering solid foundations in biochemistry, microbiology, and molecular genetics with an emphasis on interdisciplinary training. Faculty research interests are diverse and include the molecular basis of microbial colonization and virulence; the biochemistry of cellular signaling; the molecular origins of cancer; the development of vaccines against infectious disease; the roles of microbial consortia in the marine environment; comparative and evolutionary genomics; the control of gene expression by endogenous and environmental signals; the genetics of marine organisms; the molecular biology and genetic modification of plants; agricultural biotechnology; and developmental gene regulation.

**Integrative and Evolutionary Biology (IEB):** this graduate group focuses on the diversity of form and function of organisms from evolutionary and physiological perspectives, as well as the application of these approaches to health, agriculture, and the environment. Faculty research interests are diverse and include animal science (including reproduction, nutrition, management and health), aquaculture (including ecology, physiology, nutrition and health), cellular and behavioral neurobiology (including sensory biology and neuroethology), evolutionary biology, genomics (comparative, evolutionary and marine), morphology and development (including functional morphology, biomechanics and evolutionary developmental biology),
paleontology, physiology and pathology (including environmental, stress, reproductive and comparative physiology, endocrinology, aquatic pathology), plant biology, and human health.

**Ecology and Ecosystem Sciences (EES):** this graduate research group focuses on patterns and processes within and among populations, communities, and ecosystems. Faculty research interests are diverse and include ecological studies across the spectrum of biological organization (molecular, organismal, population, community, ecosystem, and landscapes) that focus on the intra- and interspecific interactions of microbes, algae, plants, insects, invertebrates and vertebrates that inhabit a variety of terrestrial, coastal, freshwater, and marine ecosystems. Much of this research addresses important environmental issues with implications for public policy such as the ecology of endangered species and habitats, the biological control of algal blooms, invertebrate pests, parasites and disease, anthropogenic nutrient enrichment and bioremediation, ecohydrology of coastal wetlands, landscape change, climate change, invasive species, fisheries, and habitat restoration.

**Environmental and Earth Sciences (EVES):** This graduate research group focuses on the history, function and condition of Earth’s environments from local to global scales. Faculty research interests encompass all aspects of the natural sciences including geology, biogeochemistry, hydrology, soil science, assessment of biodiversity, microbial ecology and global change. Most of this research uses combinations of geospatial data technologies, computer modeling, state-of-the-art analytical instruments and field investigations to advance our knowledge of Earth processes and the management of water resources, shorelines, wetlands, and terrestrial landscapes to sustain healthy environments and to rehabilitate and restore damaged environments.

**Admission and Program Requirements Master of Science in Biological & Environmental Sciences (MSc in BES)**

*Admission Requirements:* Graduate Record Examination general test and a bachelor's degree in a biological or physical science, natural resources science, math, engineering or other appropriate discipline. Applicants with course deficiencies may be required to take additional undergraduate courses for no program credit, and to demonstrate, by their performance in such course work or through a qualifying exam, basic knowledge of the subject matter in the area(s) of deficiency.

*Program requirements:* a minimum of 30 credits beyond the bachelor’s degree. This includes a minimum of 6 and a maximum of 9 thesis credits (599 courses), a minimum of 18 credits of formal course work, and a maximum of 6 credits in special problems and directed studies courses.

**Doctor of Philosophy in Biological & Environmental Sciences (PhD in BES)**

*Admission Requirements:* Graduate Record Examination general test and a bachelor's degree in a biological or physical science, natural resources science, math, engineering or other appropriate discipline. Applicants with course deficiencies may be required to take additional undergraduate courses for no program credit.

*Program requirements:* a minimum of 72 credits of graduate study beyond the bachelor’s degree (a master’s degree may count for up to 30 credits). At least 42 credits must be taken at University of Rhode Island. Required coursework and dissertation credits depend on the preparation and study plan of the individual student. All degree candidates are required to prepare a program of study in consultation with
their major professor and doctoral committee. Written and oral comprehensive examinations and a defense of dissertation are required. A qualifying examination will be required for students who are admitted without a master’s degree and may be required for students whose prior degrees are outside of the proposed Ph.D. field of study.

*Indicates an item tabled from a previous Graduate Council meeting

B. Graduate Manual Revision Committee – sections 10 and 11 included as an attachment to the email containing this agenda – Reminder Please bring a laptop or copy to review

V. New Business

A. Review policy of deleting graduate courses not offered for two year and not scheduled for the third year.

B. Statement regarding 599 and 699 research courses - S/U grading only

C. Dean Ron Jordan would like to speak to the Graduate Council regarding the question of whether Pharm.D. graduates should be allowed to walk in the Graduate Commencement ceremony.

VI. Old Business

VII. Adjournment