UNC CHARLOTTE
Office of Academic Affairs

9201 University City Boulevard, Charlotte, NC 28223-0001

TO: Faculty Council Members

FROM: Michael Green, Faculty President

DATE: June 21, 2011

RE: Consent Calendar

Attached is the Consent Calendar (See Article V, Section 3.A (3 & 4), J. (3 & 5) and K.3 of the Standing Rules of the Faculty Council.) consisting of these proposals:

- NANO 4-29-10 — Establishment of Nanoscale Science Core Courses and a Special Topics Course
- SoA Graduate 3-16-11 — Graduate Curriculum New Coursework and Revision of Curriculum Sequence
- BIO 2-11-11 — Revisions to the degree requirements for the PhD program in Biology

Below are the catalog copy descriptions. If you wish to read the full proposals, they are posted on the Academic Affairs website.

If there are any objections regarding these proposals, they must be registered with the Faculty Governance Assistant (Clarence Greene, ext. 5719) by **5 PM on July 5, 2011**. If no objections are registered, the proposals will stand approved.

NANO 4-29-10 Establishment of Nanoscale Science Core Courses and a Special Topics Course

PROPOSED SUMMARY AND CATALOG COPY

Summary.

The Nanoscale Science Ph.D. Program proposes to officially establish the program's core courses (NANO 8001, NANO 8101, NANO 8102, NANO 8103, NANO 8104, NANO 8201, NANO 8202, NANO 8203, NANO 8681, NANO 8682, NANO 8900) and a special topics course (NANO 8060).

Proposed Catalog Copy.

NANO 8001. Perspectives at the Nanoscale. (2) NANO program faculty members present and discuss their research in nanoscale science to: (1) demonstrate how scientists from different

disciplines approach problem-solving at the nanoscale, and (2) expose students to research opportunities for dissertation work. Students write summaries of the presentations. *(Fall)*

NANO 8060. Special Topics in Nanoscale Science. (1-3) Prerequisite: permission of the instructor. Selected topics in nanoscale science. May be repeated for credit. *(On demand)*

NANO 8101. Introduction to Instrumentation and Processing at the Nanoscale. (3) Methods of manipulating, engineering, and characterizing nanoscale materials are introduced; applications and principles of their operation are discussed. Students acquire hands-on experience with selected laboratory methods in preparation for dissertation research. Topics include, but are not limited to, scanning probe and electron microscopy methods, cleanroom technology, nanoscale optical and e-beam lithography, nuclear magnetic resonance, mass spectrometry, luminescence methods, interferometry, gel permeation chromatography, surface area analysis, and small-angle x-ray and neutron scattering. *(Fall)*

NANO 8102. Nanoscale Phenomena. (3) Topics include, but are not limited to, scaling phenomena; nano-optics (near-field optics, limits of lithography masks, nano-dots and nanoscale optical interactions); nanoscale mechanics; nanotribology; biological and biologically-inspired machines. *(Fall)*

NANO 8103. Synthesis and Characterization of Nanomaterials. (3) Prerequisites: NANO 8101 and NANO 8102. Topics include, but are not limited to, quantum dots, metallic nanoparticles, carbon nanostructured materials and nanotubes, zeolites, organicinorganic polymers, composite materials, solution-phase colloids, sol-gel process, silica spheres, porous silicon, photonic crystals. *(Spring)*

NANO 8104. Fabrication of Nanomaterials. (3) Prerequisite: NANO 8101. Lithographic methods (CVD, PVD, e-beam, ion beam, magnetron, evaporation, spin coating, mask fabrication, developing resists); microelectromechanical systems and nanoelectromechanical systems; limits of conventional mechanical processing, electroforming, growth mechanisms (organic, inorganic, thermal); powders. *(Spring)*

NANO 8201. Research Group Rotations. (1) Students interact on a regular basis with selected research groups in nanoscale science from at least three different departments at UNC Charlotte. Specific activities range from meeting with the group's professor and/or other group members, attending group meetings, and observing laboratory experiments and procedures. Research groups are chosen so that each student is exposed to an array of research activities of the Nanoscale Science faculty. At the end of each rotation, the visiting student delivers a presentation to the visited research group, describing what the student learned about the visited group's research activities. *(Fall)*

NANO 8202. Interdisciplinary Team Project. (2) Corequisite: NANO 8682. An encapsulated, semester-long research experience designed to introduce students to laboratory work in nanoscale science. Students work, in interdisciplinary teams of 2-4 students, on a short research project and present their results during a meeting of the Nanoscale Science Colloquium. *(Spring)*

NANO 8203. Collaborative Research Proposal. (3) Effective strategies for designing and writing research proposals are presented by program faculty members, and staff from proposal development offices on campus. Students work in teams of 2-3 to prepare an original, interdisciplinary research proposal on a topic in nanoscale science. The proposal conforms to regulations of a selected funding agency and must address a topic that is supported by that agency. Each team consults regularly with a panel of 2-3 faculty members who collectively approve the proposal topic, provide feedback during the development of the proposal, and ultimately evaluate the proposal. The course
is designed to increase the ability of students to relate research ideas to fundamental concepts in science and engineering, to help students learn to develop effective
methods of presenting ideas and defending them, to help students develop self confidence in their abilities to present and defend ideas, and to improve oral and written
communication skills. *(Spring)*

NANO 8681. Nanoscale Science Seminar. (1) Students attend weekly seminars of visiting speakers of the Nanoscale Science program or other approved programs on campus. Seminars are selected to best meet the educational needs of the individual student. Students submit for grading summaries of the seminars attended. (May be repeated for credit) *(Fall/Spring)*

NANO 8682. Nanoscale Science Colloquium. (1) Students present seminars on current topics in nanoscale science to the faculty and student participants of the program. Presentations address dissertation research, the current literature, group projects, and special topics. The colloquium provides an opportunity for students to discuss
topics in Nanoscale Science with faculty from all of the participating disciplines. (May be repeated for credit) *(Fall/Spring)*

NANO 8900. Dissertation Research. (1-8) Research for the dissertation. (May be repeated for credit) *(Fall/Spring/Summer)*

NANO 9999. Doctoral Degree Graduate Residency Credit. (1) Prerequisite: NANO 8900. Required of all Nanoscale Science Ph.D. students who have completed all requirements for the degree except the dissertation defense and are taking no other courses. May be repeated for credit. Credit for this course does not count toward the degree. *(Fall/Spring/Summer)*

SoA Graduate 3-16-11 Graduate Curriculum New Coursework and Revision of Curriculum Sequence

PROPOSED SUMMARY AND CATALOG COPY

Summary: The School of Architecture proposes to:

a) add six new courses to its MArch Program (ARCH, 5203, 5604, 5605, 6306/6307, 6602, and 6603),
b) eliminate one course (ARCH 7110), and
c) make minor revisions to the sequence of coursework.

The proposal changes the total credit hours required for the MArch degree, raising the number to 96 credit hours for the 3+ year curriculum (currently 89 credits hours) and 60 credit hours for the 2-year curriculum (currently 56 credit hours). Approval for these changes are part of this proposal.

Along with these changes comes a renumbering and retitling of courses to provide clarity and to better comply with sequence nomenclature and classification. For reference, see separate *Short Form Memo ARCH Graduate 3-16-2011* that address these minor changes.

Changes sought in this proposal, and the parallel *Short Form Memo ARCH Graduate 3-16-2011* proposal, once approved, will be partially implemented beginning Fall 2011 with all changes in effect by Fall 2012.

Catalog Copy: Catalog copy for new coursework proposed includes:

ARCH 5203: Architectural History III: Survey of Contemporary Theory (1950 - Present). (3) Prerequisite: ARCH 5202 or permission of instructor. This course is a survey of architecture theory from 1950 to the present. It focuses on the key ideas, texts, debates, and discourse that have informed architectural practice in the late twentieth and early twenty-first century. (*Fall)*

ARCH 5604 Computational Methods. (3) Pre-requisite: ARCH 6603, Corequisite: ARCH 7101 or permission of instructor. This course introduces students to the fundamental concepts of computation through explorations with basic scripting and parametric tools. The goal is to understand the potential of computation and the role it can play as part of one's design process, not as a collection of specific tools, but as a way of thinking about design. *(Fall)*

ARCH 5605. Computational Practice. (3) Pre-requisite: ARCH 5604 or permission of instructor. This course is the capstone for digital media and computational studies in the School of Architecture. The goal of this seminar course is to provide students with experience using advanced digital tools and methods, including digital fabrication, parametrics, Building Information Modeling/Management (BIM), scripting, and performance analysis in preparation for professional practice and/or advanced graduate research. *(Spring)*

ARCH 6306/6307: Technology Topic. (3) Prerequisite: ARCH 5305 or permission of instructor. This course focuses on the study of topical areas of technology in architecture. These courses provide an in-depth extension of the five required technology courses. The course may be selected from a number of designated technology courses that examine specific issues contributing to architecture as a process of investigation, innovation, analysis and/or research. May be repeated for credit as course topics change. *(Fall and Spring)*

ARCH 6602. Representation I: Fundamentals. (3) Prerequisite: ARCH 6100, Corequisite: ARCH 6101 or permission of instructor. A fundamental visual and architectural skills course that includes lessons in: visual composition, 2D design and

communication, 3D physical models, graphic and photographic image manipulation, and craft in design. The course also includes readings and criticism, which address the artistic and architectural correlation of these skills. *(Fall)*

ARCH 6603. Representation II: Digital Fundamentals. (3) Pre-requisite: ARCH 6602, Co-requisite ARCH 6102. This course introduces students to architectural drafting (2D) and modeling (3D) using digital tools and processes. The expected outcome of this course is a student who is skillful, adaptable, and, most of all, critical towards digital media. (*Spring*)

BIO 2-11-11 Revisions to the degree requirements for the PhD program in Biology

Years ~~1–4~~1 & 2:
Interdisciplinary Colloquium; ~~4~~2 semester hours (1 hour per year). This course brings together faculty and students from the participating programs in an informal discussion of interdisciplinary research. (Fall semester only).

Years ~~1–4~~1 & 2:
Seminar; ~~4~~2 semester hours (1 hour per year). Formal student presentations of current literature topics in their area of study. (Spring semester only).