

The Graduate Curriculum Committee (GCC)

Meeting Minutes

Wednesday, September 5, 2012

Regular Members Present:

Jim Decker (Chair)
Bob Thompson (Vice-Chair)
Carol Brown
Amy Carr-Richardson
Hamid Fonooni
Will Forsythe
Rich Franklin
Linda Mayne
Ravi Paul

Regular Members Absent/Excused:

None

Ex-Officio Members Present:

Linner Griffin and Meaghan Johnson

Ex-Officio Members Absent/Excused:

None

Academic Program Planning and Development:

Kimberly Nicholson

Guests:

Center for Sustainable Tourism: David Edgell, Carol Kline, and Pat Long
College of Education: Frank Crawley
Brody School of Medicine: Fred Bertrand, Christopher Geyer, and Brett Keiper

Actions of Committee:

I. Call to Order

1. Report on Graduate Council (GC) Actions

The GC approved revision of Part II Section IV of the Faculty Manual, to include adding the chair of the GCC as a member of the Graduate Council Executive Committee (GCEC). Chair Decker has stepped down from the role of vice chair of the GC and will continue in his role as representative of the GCC on the GC and GCEC.

2. The 08-22-12 GCC minutes were approved electronically and forwarded to the Graduate Council for agenda placement.

The GC approved the 08-22-12 GCC minutes, which included the doctor of nursing practice request for authorization to establish.

II. GCC Membership

The committee welcomed both Dr. Carr-Richardson and Dr. Franklin to the GCC.

1. Amy Carr-Richardson, College of Fine Arts and Communication

2. TBD, College of Allied Health Sciences

III. Center for Sustainable Tourism – postponed to 09-19-12 GCC meeting

The unit provided a handout at the meeting (faculty, calendar, and graduate assistant information). Package resubmission deadline is noon on Tuesday, 09-11-12 in order to be considered at the 09-19-12 GCC meeting. Attendance by the faculty is not required, however highly recommended.

Proposal of New Courses: SUTO 6600, 6610, 6700, 6710, 6900

Postponed to 09-19-12 GCC meeting

- (1.) It is okay for the courses to be comparable to each other, however they should be distinctive from each other
- (2.) Revise #5 justification in all proposal forms as applicable (include graduate faculty approval; identify gap and how the courses address the gap; include accrediting body or national/international organization standards and competencies to strengthen the proposals)
- (3.) Revise #6 course description to end at “tourism” and update prerequisite to “consent of program director” (SUTO 6900)
- (4.) Complete #10 in all proposal forms (if no impact on degree hours of your program(s), indicate N/A)
- (5.) Complete #11 in all proposal forms (if no impact on degrees or academic programs other than your own, indicate N/A)
- (6.) Update #16a to include the exact readings identified in the “course pack”
- (7.) Review #16b objectives in all courses for appropriate rigor at master’s level (replace verbs such as “recall, correctly use, recognize, and understand” with measureable and observable verbs such as “analyze” and remove the extra “the” in SUTO 6600)
- (8.) Identify differentiation within #16b course objectives if there are differences within the course as to how the objectives apply in regard to variable credit (SUTO 6600, 6610, 6710, 6900)
- (9.) Address the differentiation of variable credit within #16c course topic outline (SUTO 6600, 6610, 6710, 6900)
- (10.) Revise #16c course topic outline to include samples (SUTO 6700, 6710, 6900)
- (11.) Revise marked catalog copy (all should match descriptions in proposal forms)

Editorial Revision of Program Text: MS in Sustainable Tourism

Postponed to 09-19-12 GCC meeting

Revision of Existing Degree: MS in Sustainable Tourism

Postponed to 09-19-12 GCC meeting

IV. College of Education, Department of Mathematics, Science, and Instructional Technology Education

Proposal of New Courses: SCIE 6005, 6030, 6320

Approved as amended

- (1.) Check “required” in #3 (SCIE 6005, 6030, 6320)
- (2.) In #5 justification state “graduate faculty” approval (SCIE 6005, 6320)

- (3.) Make sure #6 description matches description in marked catalog copy (SCIE 6005)
- (4.) Revise title in #6 description and in marked catalog copy to “Advanced Assessment Methods in Science Education” (SCIE 6320)

Proposal of New Course: SCIE 6998 - postponed

Postponed for resubmission at the unit’s convenience

- (1.) Remove new course SCIE 6998 from SCIE course list in marked catalog copy
- (2.) Resubmit as part of a complete package (memorandum of request, proposal form, marked catalog copy, Office of the Registrar support memorandum, notification of affected units, and signature form)
- (3.) Show differentiation of variable credit in #16b course objectives and #16c course topic outline as applicable

Revision of Existing Courses: SCIE 6003, 6004, 6020, 6310, 6500, 6600

Approved as amended

- (1.) Revise memorandum of request
- (2.) Check “required” in #3 (SCIE 6003, 6004, 6020, 6310, 6500, 6600)
- (3.) In #5 justification state “graduate faculty” approval (SCIE 6003, 6004, 6020, 6310, 6500, 6600)
- (4.) Revise #6 course description and marked catalog copy (SCIE 6020, 6310, 6500)
- (5.) Revise #16b course objectives (SCIE 6004)

Revision of Existing Courses: SCIE 6522 - postponed

Postponed for resubmission at the unit’s convenience

- (1.) Revert text in marked catalog copy to original black text
- (2.) Resubmit as part of a complete package (memorandum of request, proposal form, marked catalog copy, Office of the Registrar support memorandum, notification of affected units, and signature form)
- (3.) Show differentiation of variable credit in #16b course objectives and #16c course topic outline as applicable

Deletion of Existing Course: SCIE 5010

Approved as amended

Revision of Existing Degree: MAEd in Science Education

Approved as amended

V. Brody School of Medicine, Department of Oncology Education

Proposal of New Course: ONCO 7200

Approved as amended

- (1.) Revise #5 justification to include graduate faculty approval statement and replace “felt that there is” with “identified” or “concluded” a need and interest to offer a single course on the molecular and cellular biology of cancer
- (2.) Revise #8 course credit to “7” students
- (3.) Revise #16a textbooks/readings to tie the readings in with the course title and/or descriptive text for the course
- (4.) Revise #16b course objectives to refer to the course content and published literature

New Departmental Text: Department of Oncology

Approved as amended

- (1.) Identify Peter Kragel as interim chair

VI. Brody School of Medicine, Department of Biochemistry and Molecular Biology – concurrent submission with Item VII

Proposal of New Course: BIOC 7365

Approved as amended

- (1.) Revise #5 justification to include graduate faculty approval and remove final three sentences
- (2.) Remove “fundable” from #6 course description and marked catalog
- (3.) Revise #8 course credit to “7” students
- (4.) Remove “Rather” from #16a
- (5.) Replace “easily readable” to “articulate” in #16b course objectives
- (6.) Fix typographical error in #16c course topic outline

Editorial Revision of Departmental Text: Department of Biochemistry and Molecular Biology

Approved as amended

VII. Brody School of Medicine, Department of Anatomy and Cell Biology – concurrent submission with Item VI

Proposal of New Course: ANAT 7365

Approved as amended

- (1.) Revise #5 justification to include graduate faculty approval and remove final three sentences
- (2.) Remove “fundable” from #6 course description and marked catalog
- (3.) Revise #8 course credit to “7” students
- (4.) Remove “Rather” from #16a
- (5.) Replace “easily readable” to “articulate” in #16b course objectives
- (6.) Fix typographical error in #16c course topic outline

VIII. Old Business

- 1. Update on Graduate Council recommendations regarding the plus/minus grading scale**
A task force has been established by the Graduate Council to address this further. No action was taken by the GCC.
- 2. Update on implementation of initial catalog cleanup utilizing the *Active Courses Not Offered in 10 years Action Plan***
Chair Decker sent a memorandum to Dean Gemperline with a request for him to forward the information action plan to the deans for a response prior to deletion of courses.
- 3. GCC Resource Person Orientation, August 29, 2012**
Chair Decker stated the event went very well and thanked Diane Coltraine and Kimberly Nicholson for their assistance.

- 4. Reminder of Academic Program Development Workshop, September 7, 2012**
- 5. Reminder of Curriculum Development Workshop, September 14, 2012**
- 6. Reminder of Request for Inclusion Workshop, September 21, 2012**

IX. New Business

- 1. Possible Revision of Minimum GPA for Dual Degrees**

Current GPA requirement is 3.5. This may change. The GCC should consider if they want to provide any input to the GC regarding this potential action.

- 2. Streaming Audio of GCC Meetings**

Ms. Hillary Huffer, one of the graduate student representatives, expressed an interest in listening in on the GCC meetings from out of area. Ms. Johnson has been physically attending the meetings on behalf of the Graduate and Professional Student Senate. The committee discussed the possibility of streaming audio in the future.

Marked Catalog Copy:

IV. College of Education

Department of Mathematics, Science, and Instructional Technology Education

pp. 194 & <http://www.ecu.edu/cs-acad/grcat/CoursesMATE.cfm>

SCIE: Science Education

5000. Contemporary Approaches to Teaching Biological Science (3) P: BIOL 1100, 1101, 1200, 1201; or equivalent; minimum of 16 s.h. in BIOL. Effective teaching in biology using current curricula materials. Emphasis on investigative nature of biology.

5010. Applications of Microcomputers in Teaching Physical Science (3) 2 1-hour lectures and 1 2-hour lab per week. Use of microcomputer to assist in teaching physical science. Topics include operation of microcomputer, review and evaluation of available software, and computer techniques to illustrate physical science concepts.

5020. Applications of Microcomputers in Teaching Biological Science (3) Use of microcomputer to assist in teaching biological science. Topics include operation of microcomputer, review and evaluation of available software, and computer techniques to illustrate biological concepts.

5990. Apprenticeship Science (3) Direct supervision in lab procedures by members of science staff.

6000. Science and Society (3) Selected topics to demonstrate social, historical, and philosophical aspects of science. Emphasis on science-society interaction.

6003. Selected Topics in Life Science for Middle Grades Teachers (3)

6003. Advanced Studies in Biological Science for Teachers (3) Analysis of advanced concepts, principles, and practices in the biological sciences, content-specific learning problems students encounter, and their implications for biological science education.

6004. Selected Topics in Physical Science for Middle Grades Teachers (3)

6004. Advanced Studies in Physical Science for Teachers (3) Analysis of advanced concepts, principles, and practices in the physical sciences, the content-specific learning problems students encounter, and their implications for physical science education.

6005. Advanced Studies in Earth Systems Science for Teachers (3) Analysis of advanced concepts, principles, and practices in the earth system sciences, content-specific learning problems students encounter, and their implications for earth systems science education.

6006. Chemistry for Middle Grades Teachers (3) P: Minimum of 1 year teaching experience in grades 6-9 or consent of instructor. Content and instructional methods for chemistry for grades 6-9 teachers. Emphasis on demonstrations and hands-on activities.

6010. The History and Philosophy of Science (3) Develop scientific ideas, their origin, growth, and relationship to present.

6019. Science in Elementary Education (3) P: Initial Teaching Licensure in elementary or special education. Current trends and issues. Emphasis on contemporary literature and classroom implementation.

6020. Recent Developments in Science Teaching (3) Curricular trends and innovations. Emphasis on development of philosophical analyses of science teaching and learning practices reflective of past, current, and future science education reform agendas.

[6020. Perspectives on Science Education \(3\) P/C: SCIE 6030. Analysis of state, national, and international science curriculum, teaching as well as assessment practices, results and their implications for science education.](#)

[6030. Technology in Science Teaching, Learning and Professional Development \(3\) Using and evaluating digital technologies to expand science teaching, learning and professional development and to engage students in learning and applying science principles and inquiry practices.](#)

6050. Developmental Approaches to Science Teaching (2) P: NC teaching licensure or equivalent; formal acceptance into DASH summer institute. Developmental Approaches in Science and Health (DASH) program is an interdisciplinary science curriculum designed for grades K-2. Focus on methodology and content. Follow-up sessions.

6081. Astronomy Methods for Teachers (2) P: PHYS 1080, 1081; or 2 years' teaching of astronomy unit in school; PHYS 1050 or PHYS 1250. Methods of teaching astronomy using activities, experiments, observations, and library/computer resources.

6200. Environmental Education (3) Critical examination of issues arising from human interaction with natural environment. Focus on themes such as history of environmental movement, environmental ethics and values, and local, state, and global environmental issues.

6310. Advanced Methods in Teaching Science (3)

Applies theoretical, philosophical, and research bases for improvement of education practice. Planning, instruction, and evaluation techniques expected of master teacher.

[6310. Advanced Methods in Science Teaching and Learning \(3\) P: SCIE 6020, 6030. Analysis and application of standards- and research-based practices to improve science teaching and learning for regular, diverse and special needs students.](#)

[6320. Advanced Assessment Methods in Science Education \(3\) P/C: SCIE 6310. Survey of contemporary science assessment methods/practices and their application to promote learning for regular, diverse, and special needs students.](#)

6420. Marine Education (3) P: Initial Teaching Licensure in elementary, middle, or secondary education or consent of instructor. Current status of marine education. Emphasis on student involvement and development of classroom instruction materials.

6500. Understanding and Engaging in Educational Research (3) Research on human development and learning and pedagogical knowledge and skills expected of master teacher. Current trends and issues in education, skills in data collection, and application of research in classroom.

[6500. Understanding and Engaging in Educational Research \(3\) P: SCIE 6320 or consent of instructor. Development and use of qualitative, quantitative, and mixed-methods research to systematically study and improve educational outcomes. Teachers will develop a research proposal to improve the outcomes of their teaching practice.](#)

6501. Experimental Evaluation in Science (3) Experimental design, evaluation, and research methods as related to classroom and lab teaching and coordination of various sciences.

6505. Problems in Science Education (Elementary) (3) Research in science teaching at elementary school level.

6506. Problems in Science Education (Secondary) (3) Research in science teaching at middle and senior high school levels.

6507. Problems in Science Education (College) (3) Research in science teaching at college level.

6522. Readings in Science Education (1) Special topics to improve student's background selected in collaboration with instructor of student's choice. Readings selected from sources appropriate to any level of science teaching.

6525. Selected Topics in Biological Science for Elementary Teachers (3)

6530. Selected Topics in Physical Science for Elementary Teachers (3)

6535. Selected Topics in Earth Science for Elementary Teachers (3)

6600. Action Research in Teaching (3) Development of systematic reflection by teachers through action research strategies to examine issues in learning and teaching.

6600. Teacher Research in Science Education (3) P: ADED 6550 or ELEM 6550; SCIE 6500; or consent of instructor. Application of qualitative, quantitative, and mixed methods research in the systematic study of science teaching and learning. Science teachers conduct an action research project in their classroom.

7000. Thesis (1-6) May be repeated. May count maximum of 3 s.h.

7001. Thesis: Summer Research (1) May be repeated. No credit may count toward degree. Students conducting thesis research may only register for this course during the summer.

pp. 159-160 & <http://www.ecu.edu/cs-acad/great/COE.cfm>

SECTION 8: CURRICULA

3. Satisfactory entrance examination scores on either the Graduate Record Examination or the Miller Analogies Test. This must be completed prior to admission or completion of 9 s.h. of graduate credit.
4. A completed Graduate School application packet, including the written statement of purpose, a copy of the initial teaching license, and three letters of recommendation from persons who can attest to the applicant's academic competence or ability to do graduate work.

Upon acceptance into a teaching area, the student is assigned an advisor.

Required core courses - 12 s.h.

Research, Trends, and Issues Competency Area: EDUC 6480, 6482 or SCIE 6500 - 3 s.h.

Diverse Learner Competency Area: EDUC 6001; SPED 6002 - 6 s.h.

Effective Communication and Leadership Competency Area: LEED 6000 or ADED 6550 or ELEM 6550 - 3 s.h.

Teaching area specific courses

(Choose from one of the following areas.) - 24-27 s.h.

Business education - 27 s.h.

Required core courses - 15 s.h.

BITE 6410, 6426, 6450, 6492, 6750

Choose from the following - 12 s.h.

BITE 5200 or 5503; choose from 6100, 6103, 6420, 6424, 6428, 6430, 6435, 6700, 7000. Students selecting the thesis option must register for BITE 7000 and may count 6 s.h. of BITE 7000 toward the degree.

Elementary education - 24 s.h.

ELEM 6000, 6001, 6200, 6400, 6500

Choose 9 s.h. in an elementary content strand as follows:

Academically Gifted: SPED 6104, 6401, 6402 (SPED 6403 is a requirement for add-on licensure in gifted education)

Content Pedagogy: ELEM 6406; 6412 or 6488; MATE 6320; SCIE 6019; READ 5316 or 6421

Teacher Leadership in the Elementary School: ELEM 6408; LEED 6805, 6830

Early Childhood: ELEM 6412, 6408, and 6410

Thesis: ELEM 7000 (May be repeated. May count 6 s.h. toward the degree. Can be substituted for 3 s.h. in one of the content strands.)

Final product requirement: A research project with an oral presentation (ELEM 6000 and 6001) or a thesis with an oral thesis defense (ELEM 7000).

English - 27 s.h.

ENED 6510, 6511 (IRB research approval procedures are required for all students in this research series) 18 s.h. of English or English Education courses, 6 s.h. of which must be at the 6000 or 7000-level.

Choose 3 s.h. from COAD 6358; READ 5317; SPED 6000

Final product requirement: A research project initiated in ENED 6510 and completed with an oral presentation in ENED 6511.

Health education - 24 s.h.

HLTH 5310, 6100, 6200, 6300, 6355, 6400

Internship: HLTH 6990, 6991

Final product requirement: A professional portfolio (HLTH 6990 and 6991) is required for completion of the final product requirement.

History education - 27 s.h.

HIED 6510; HIST 6900, 6993

Concentration: Choose American History or European History

Choose 21 s.h. in the area, including 9 s.h. from the historiography course, the seminar in issues and topics, and a directed research project.

6 s.h. in a related field outside the concentration.

At least 3 s.h. of coursework must be in the area of culturally diverse or multicultural populations.

Final product requirement: A research project with an oral defense and comprehensive oral examination.

Instructional Technology - 24-27 s.h.

EDTC 6010, 6020, 6025; 6035 or 6037; 6139; 6149, 6992, two electives

Final product requirement: Either the development of a professional portfolio and an internship (EDTC 6992) or a thesis with an oral defense (EDTC 6995) and an internship (EDTC 6992).

Marketing education - 27 s.h.

BITE 5200, 5201

BITE 6400 or 6700; 6426, 6450, 6750

MKTG 6162, 6822, 6842

Choose a technology elective from BITE, or EDTC

Final product requirement: The development of a professional portfolio with an oral defense or a thesis with an oral defense (BITE 7000).

Middle grades education - 24 s.h.

MIDG 6000, 6100, 6200, 6300, 6401

Concentration Area: Choose 12 s.h. from one concentration area or a minimum of 9 s.h. from one area and 3 s.h. from another.

English: ENED 6510; ENED 6630 or ENGL 6625; ENGL 6340 or 6360 or 6460; ELEM 6488, 6515; 3 s.h. ENGL or ENED elective

Mathematics: MATE 5263, 5264, 6321; MATH 6264; 3 s.h. MATE or MATH elective

Science: SCIE 6003, 6004, 6020, 6200, 6310, 6506

Social studies: ELEM 5306 or 6406; GEOG 5283, 6393; HIED 6510; HIST 5122, 5130, 5135, 5340, 5765

Thesis: MIDG 7000

Final product requirement: A research project with a presentation and written documentation (MIDG 6001 and 6401) or a thesis with an oral thesis defense (MIDG 7000).

Physical education - 24 s.h.

Choose one concentration area:

Adapted Physical Education: EXSS 5303, 5305, 5903, 6201, 6300, 6301, 6990, 6991, 6994; 3 s.h. elective

Physical Education Pedagogy: EXSS 6101, 6104, 6108, 6109, 6110, 6202, 6300, 6301, 6990, 6991

Final product requirement: In addition to successfully passing a written comprehensive exam, a research project (EXSS 6994) or a professional portfolio (EXSS 6990, 6991) is required.

Reading education - 27 s.h.

COAD 6358; READ 6406, 6407, 6418, 6430; READ 6421, 6422; or 6431, 6432

Choose 6 s.h. from one option as follows:

Option I. Courses for Related Study: Approved electives from reading and classroom teaching, reading specialist, adult literacy, English as a second language, or a combination of related study courses

Option II. Non-Thesis: Choose from approved list of electives

Option III. Thesis (2 required courses): READ 7000 (May count 6 s.h. toward degree)

Final product requirement: A professional electronic portfolio (READ 6406, 6407, 6418, 6421, 6422, 6430) and presentation.

Science education - 24 s.h.

SCIE 6020; 6200 or 5010; 6310, 6600, and 9 s.h. coursework from fields of biological, physical, and earth science (BIOL, CHEM, GEOL, PHYS, and SCIE)

Final product requirement: Choose 3 s.h. of thesis (SCIE 7000) or research problem option, which requires completion of SCIE 6505 or 6506 or 6507.

Science education – 27 s.h.

SCIE 6003, 6004, 6005, 6020, 6030, 6310, 6320, 6500 and 6600. Final product requirement: Action research project.

Special education - 30 s.h.

SPED 6010, 6011, 6012, 6014, 6015

Choose 15 s.h. from one concentration area as follows:

Behavioral/Emotional disabilities: SPED 6023, 6027, 6994, 7000 or 7002; approved electives

Learning disabilities: SPED 6022, 6025, 6994, 7000 or 7002; approved electives

Low Incidence disabilities: SPED 6030, 6031, 6994, 7000 or 7002; approved electives

Electronic portfolio requirement: Demonstration of field-based master teaching, research, collaboration, and leadership skills developed throughout the SPED MAEd program

Final product requirement: Completion of a thesis (SPED 7000) or a field-based project (SPED 7002); both require a presentation to faculty and students

Special education, intellectual disabilities - 30 s.h.

SPED 6010, 6011, 6012, 6014, 6015, 6020, 6021, 6994, 7000 or 7002; approved elective

Electronic portfolio requirement: Demonstration of field-based master teaching, research, collaboration, and leadership skills developed through the SPED MAEd program

Final product requirement: Completion of a thesis (SPED 7000) or a field-based project (SPED 7002); both require a presentation to faculty and students.

V. Brody School of Medicine

Department of Oncology

Graduate Catalog Addition:

The Department of Oncology

Peter Kragel, Interim Chair, 116 Leo W. Jenkins Cancer Center

The Department of Oncology is the academic home for Brody School of Medicine oncology specialists and cancer researchers. The vision of the Department is to provide a collegial, collaborative environment for oncology specialists and cancer researchers, coalescing different disciplines within one academic unit, in order to improve the health of the people of eastern North Carolina through outstanding, multispecialty cancer care, education, basic and translational research.

Organizationally, the department includes various divisions such as the cancer biology, hematology/oncology, surgical oncology and outreach, with other oncology specialty divisions to be added dependent on faculty interest. The Department of Oncology also includes the Cancer Center clinical trials operations and the Cancer Center clinical laboratory.

The Department of Oncology is responsible for educating and training medical and graduate students, residents, physicians in private practice and in academic medicine, other health-care professionals, and the general public; extending current knowledge in the field of oncology by providing clinical and laboratory based research; caring for patients both in outpatient and inpatient settings; and providing service to the academic, private practice and lay communities.

ONCO: Oncology

7200. Molecular and Cellular Biology of Cancer (4) P: ANAT 7202 or BIOC 7310 or MCBI 7410 or consent of the course director(s). Comprehensive examination of genetics, molecular and cell biology and scientific methodology in cancer research, with a particular emphasis on current scientific literature.

VI. Brody School of Medicine – concurrent submission with Item VII

Department of Biochemistry and Molecular Biology

<http://www.ecu.edu/cs-acad/grcat/programBIOC.cfm>

Brody School of Medicine

Department of Biochemistry and Molecular Biology

Phillip H. Pekala, Chair, 5E-124B Brody Medical Sciences Building

Brett D. Keiper, Director of Graduate Studies, 5S-28 Brody Medical Sciences Building

Biochemistry is the study of the molecular basis of cellular function. It has evolved into the common language for translating the advances of molecular biology into cellular and chemical terms. In the Department of Biochemistry and Molecular Biology, we study a broad range of cellular activities, from the signals that stimulate cancer cells to grow, to the machinery that powers muscle contraction, to the specialization of cell types for animal reproduction, to the way tissues store fat for energy supply. Our research explores the functional attributes of DNA, mRNA, proteins and lipid membranes. Like all biologists, we attempt to correlate structure with function, but at a molecular level of detail, including the chemical reactions involved.

The field of biochemistry brings together the areas of molecular genetics, cell biology, and biophysics. Each of these headings can be further subdivided into the classical areas of enzymology, metabolism, bioenergetics, structure and function of nucleic acids, proteins, carbohydrates and lipids.

Our faculty provide students and postdoctoral fellows with a research experience aimed at understanding fundamental mechanisms of cellular processes. The advances of the next decade will rely on a blend of structural biology, molecular biology and molecular genetic techniques. We integrate these methods to research topics that span from regulation of gene expression and chromatin structure, to cell signaling, cell cycle control, mRNA, and protein structure and function, and receptor-ligand or enzyme-substrate kinetics. We utilize prokaryotic, nematode, and mammalian model organisms and employ advanced genomics, proteomics, microscopy instrumentation.

If our approach to research science appeals to you, we encourage you to contact us and explore our website [<http://www.ecu.edu/cs-dhs/biochemistry>]. We can provide opportunity for applicants to visit our state of the art facilities and learn more about research programs and graduate education.

<http://www.ecu.edu/cs-acad/grcat1213Fixed/coursesBIOC.cfm>

BIOC: Biochemistry

7300. Medical Biochemistry (6) P: General chemistry; organic chemistry; general biology; calculus; consent of chair. Emphasis on human biochemistry in chemistry and function of enzymes and other proteins; mechanisms of energy transduction; metabolism of carbohydrates, lipids, amino acids, and proteins; biochemistry of gene and gene expression; tissues and organ metabolism; regulation of metabolism; biochemical aspects of nutrition; and metabolism of abnormal cells.

7301. Biochemistry I* (4) P: General chemistry; organic chemistry; admission to a BSOM graduate program or consent of chair. Explores relationship of structure, chemical, and physical properties of

biomolecules to their biological function. Includes introduction to intermediary metabolism and role of thermodynamics and kinetics in biological systems.

7310. Molecular Biochemistry* (3) P: Admission to a BSOM graduate program or consent of chair. Replication, translation, and expression of genetic information and its regulation.

7330. Introduction to Research (1-6) May be repeated. May count a maximum of 12 s.h. P: Admission to a BSOM graduate program or consent of instructor. Assignment to faculty preceptor. May work with more than one preceptor. Design experimental protocols and collaborate in some aspect of the preceptor's research program.

7335. Seminar in Biochemistry* (1) Registration for fall and spring semesters required. P: Admission to a BSOM graduate program or consent of chair. Formal seminars and student critiques of current literature in biochemistry, concentrating on one topic each semester.

7345. Cell Motility (2) P: General chemistry, organic chemistry, general biology, and general physics; or consent of instructor. Multidisciplinary exploration of mechanism, structure, and function of motile systems essential for eukaryotic life.

7355. Current Topics (1-3) May be repeated with change of topic. P: Admission to a BSOM graduate program or consent of chair. Topics of current importance not covered thoroughly in other courses. Lectures, special reports, or lab work.

7365. Research Proposal Strategies* (2) Same as ANAT 7365 P: ANAT 7240 or BIOC 7330 or consent of chair. Formal instruction, critique and practice in writing a research grant proposal.

8305. Physical Biochemistry (2) P: BIOC 7301; calculus; admission to a BSOM graduate program or consent of chair. Applies thermodynamics and kinetics to biochemical systems.

8320. Biochemistry II: Regulation of Metabolism (4) Same as EXSS 8320 P: BIOC 7301 or EXSS 7211 or consent of chair. Regulation and integration of metabolism of carbohydrates, lipids, nucleic acids, and amino acids in humans, with an emphasis on primary research literature.

8333, 8336. Research (3,6) May be repeated. P: Admission to a BSOM graduate program in biochemistry and molecular biology or consent of chair. Design of experimental protocols and participation in preceptor's research program.

9000. Dissertation Research* (3-12) May be repeated. May count for a maximum of 36 s.h. This course is graded S or U and is not included in meeting the cumulative "B" average required for graduation.

9001. Dissertation: Summer Research (1) May be repeated. No credit may count toward degree. Students conducting dissertation research may only register for this course during the summer.

VII. Brody School of Medicine – concurrent submission with Item VI

Department of Anatomy and Cell Biology

<http://www.ecu.edu/cs-acad/grcat/ProgramANAT.cfm>

Brody School of Medicine

Department of Anatomy and Cell Biology

Cheryl B. Knudson, Chair, [7N-100 Brody Medical Sciences Building](#)

Dr. Ronald W. Dudek, Director of Graduate Studies, [7E-112 Brody Medical Sciences Building](#)

The Department of Anatomy and Cell Biology is dedicated to the advancement of biomedical research that explores relationships between structure and function through molecular, cellular, and anatomical pathways. The Department of Anatomy and Cell Biology is equally dedicated to promoting excellence in anatomical science pedagogy through the education of future anatomists in the areas of gross anatomy, developmental anatomy, histology, and neuroanatomy. In addition, the Department of Anatomy and Cell Biology provides educational instruction in the anatomical sciences to medical, dental, nurse anesthesia, physical therapy, and physician assistant students, as well as participants in a summer program for future doctors. We aim to improve human health through excellence in our biomedical research, pedagogy, and educational programs that occur in a dynamic learning community.

The mission of the Department of Anatomy and Cell Biology graduate program is fivefold: 1) to train our students in the fundamental concepts and theories that allow students to understand current health-related issues in cell and molecular biology, 2) to train our students in the latest experimental techniques, 3) to teach our students critical scientific thinking, the scientific method, analytical skills, and the art of scientific writing, 4) to instill in our students the philosophical and ethical aspects of scientific research, and 5) to train our students in the pedagogy of the anatomical sciences.

The Department of Anatomy and Cell Biology has fourteen faculty, seven staff, one curator, six research fellows, three office support staff, and six to ten doctoral students. Our internationally-recognized and funded scientists conduct research in the areas of tissue engineering, cancer biology, reproduction, neurodegeneration, and cell adhesion which provides a dynamic and innovative research environment for faculty, staff, and students. In addition, we conduct a vibrant seminar series that includes about twenty seminars per year given by students, research fellows, and guest speakers who are nationally-recognized for their research. The Department of Anatomy and Cell Biology offers both master's degrees and doctoral programs. We have a long history in training graduate students and our former students now hold prestigious postdoctoral, faculty, and professional positions.

<http://www.ecu.edu/cs-acad/grcat1213Fixed/coursesANAT.cfm>

ANAT: Anatomy and Cell Biology

6290, 6291, 6292. Current Topics in Anatomy and Cell Biology (1,2,3) May be repeated more than once. P: Admission to a BSOM graduate program or consent of chair. Read and discuss literature in selected fields relevant to anatomy. Format and subject matter may be tailored to needs of individual student or small group of students at discretion of chair, student's advisory committee, and faculty member willing to direct readings.

7200. Gross Anatomy and Embryology (8) P: Admission to the Anatomy and Cell Biology graduate program or consent of chair. Human anatomy based on systematic dissection of human body with emphasis on structure-function relationships. Pertinent human embryology and radiologic anatomy integrated topically with area of body being dissected. Relevance of different areas of anatomy and embryology to clinical procedures and/or disease processes presented by practicing clinicians.

7202. Molecular Cell Biology (4) Same as MCBI 7410 P: Admission to a BSOM graduate program or consent of course director. Foundation cornerstone course for students interested in contemporary research career. Principles of modern molecular biology as applied to study of cell structure and function. Fundamentals of molecular and cellular biology of both prokaryotes and eukaryotes, and

techniques used to study these problems included. Emphasis on critical analysis of experimental data and the experimental basis of current knowledge of cellular processes.

7210. Histology and Cell Biology (4) P: Admission to a BSOM graduate program or consent of chair. Emphasis on light microscopic features of cells, tissue, and organs. Electron microscopic features of cell organelles studied to highlight functions basic to all cells. Both histological and cell biological features integrated with physiological function, pathological abnormalities, and pharmacological treatment.

7215. Medical Neuroscience (5) Same as PHL Y 7730 P: Admission to a BSOM graduate program or consent of chair. Comprehensive survey and function of human nervous system, including introduction to clinical neuroscience. Lab sessions include dissection of human brain and study of prospected specimens.

7230. Developmental Biology (2-4) Not offered every year. P: Admission to a BSOM graduate program or consent of chair. Discuss contemporary concepts in developmental biology. Human embryological formation clearly traced to various cell and molecular biological mechanisms for clear understanding of their role, which is crucial in understanding normal, abnormal, and oncogenic development in humans.

7240. Research Problems in Cell Biology* (1-3) P: Admission to the Anatomy and Cell Biology Graduate program or consent of chair. Register for course for 3 semesters. Allow student to begin research activity and explore thesis research topics under guidance of scientist with ongoing research project. Student carefully guided to formulate hypothesis, design experiments, collect data, analyze data, and make conclusions so that research efforts will have high likelihood for seminar presentation, abstract/poster presentation at a national meeting, or journal publication.

7250. Seminar in Cell Biology* (1) P: Admission to the Anatomy and Cell Biology Graduate program or consent of chair. Register for course for 4 semesters. Student will attend dept seminar series comprised of well-respect scientists describing their recent methodology and research results in current and exciting cell biological problems as related to clinical issues. Students present formal seminar in chosen cell biological area under guidance of faculty. Faculty will instruct students in scientific content, proper slide preparation, organization, basic public speaking skills, handling of audience questions, audience awareness, and stage presence.

7345. Cell Motility (2) Same as BIOC 7345; BIOL 7345 P: General chemistry, organic chemistry, general biology, and general physics; or consent of instructor. Multidisciplinary exploration of mechanism, structure, and function of motile systems essential for eukaryotic life.

7365. Research Proposal Strategies* (2) Same as BIOC 7365 P: [ANAT 7240 or BIOC 7330 or consent of chair. Formal instruction, critique and practice in writing a research grant proposal.](#)

9000. Dissertation Research* (3-12) May be repeated. May count maximum of 36 s.h. This course is graded S or U and is not included in meeting the cumulative “B” average required for graduation.

9001. Dissertation: Summer Research (1) May be repeated. No credit may count toward degree. Students conducting dissertation research may only register for this course during the summer.