

2012-2013 LONG SIGNATURE SHEET

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11/20/12



UNC CHARLOTTE

Proposal Number: BIO 10-24-12

Proposal Title: Concentrations Creation of a Non-thesis Track within the Biology MS program and Establishment of Options within the MS and PhD Programs

Originating Department: Department of Biology

TYPE OF PROPOSAL: UNDERGRADUATE \_\_\_\_\_ GRADUATE XX \_\_\_\_\_ UNDERGRADUATE & GRADUATE \_\_\_\_\_  
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
11/19/12	11/19/12	11/20/12	Approved	<u>DEPARTMENT CHAIR</u>  [print name here:] Martin Klotz
			Approved	<u>COLLEGE CURRICULUM COMMITTEE CHAIR</u>  [print name here:] Kent L. Brintz
		1/11/13	Approved	<u>COLLEGE FACULTY CHAIR (if applicable)</u>  [print name here:] CLIFF SCOTT
		1/14/13	Approved	<u>COLLEGE DEAN</u>  [print name here:] Charles Brody
			Approved	<u>GENERAL EDUCATION</u> (if applicable; for General Education courses) [print name here:]
			Approved	<u>UNDERGRADUATE COURSE &amp; CURRICULUM COMMITTEE CHAIR</u> (for undergraduate courses only)
1/21/13	2/5/13	2-20-13	Approved	<u>GRADUATE COUNCIL CHAIR</u> (for graduate courses only)  Rob Roy McGregor
				<u>FACULTY GOVERNANCE ASSISTANT</u> (Faculty Council approval on Consent Calendar)
				<u>FACULTY EXECUTIVE COMMITTEE</u> (if decision is appealed)

BIO 10-24-12

University of North Carolina at Charlotte

Revised: Graduate Degree Program

Proposal from: Department of Biology

**Title: *Creation of a Non-thesis Track within the Biology MS Program and Establishment of Concentrations within the MS and PhD programs*****A. Proposal Summary and Catalog Copy****1. Summary**

The Department of Biology proposes to create a non-thesis track within the MS program. We also propose to establish two concentrations within the MS and PhD programs, the Molecular, Cellular and Developmental Biology (MCD) concentration and the Ecology, Evolution and Environmental Biology (E3B) concentration, to facilitate recruitment and advising.

**Please note:** the proposed creation of the Non-thesis MS track will establish a track within an existing program; it will not create a new program or involve the creation of new courses. However, we have been advised to discontinue the existing MA in Biology program in conjunction with establishing the non-thesis MS track. The form to discontinue the MA program is included in this proposal.

The creation of the MCD and E3B concentrations also does not involve the creation of new courses. The purpose of the concentrations is to help define the research foci of the department of biology to facilitate recruitment and to organize elective courses to facilitate advising students.

**2. Proposed Catalog Copy*****Copy edits to show proposed changes to existing catalog copy*****Masters of Science in Biology**

The M.S. in Biology degree program is designed for students who desire to pursue advanced studies in professional and graduate school or various vocational opportunities in biology and related areas (see [biology.uncc.edu/graduate-programs/masters-programs](http://biology.uncc.edu/graduate-programs/masters-programs)). The program provides the opportunity for broad training in a variety of biological areas, as well as specialization in areas of particular interest ~~to the student~~ through the Molecular, Cellular and Developmental Biology (MCD) concentration and the Ecology, Evolution and Environmental Biology (E3B) concentration.

The Department of Biology offers the thesis and non-thesis track within the M.S. degree. The thesis track is designed for students whose career goals include formal research training. The non-thesis track is designed for students whose career goals include graduate education, but not formal research

experience. Students may switch between the thesis and non-thesis tracks with written approval from their major advisor and the Graduate Coordinator.

~~Students have the opportunity to conduct their thesis research under the co-direction of a Biology faculty member and select faculty at the Carolinas Medical Center in Charlotte.~~

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### Additional Admission Requirements

(this section remains unchanged)

### Degree Requirements

All M.S. students must complete 30 semester hours of course work approved by a Supervisory Committee. Students may choose the Molecular, Cellular and Developmental Biology (MCD) concentration or the Ecology, Evolution and Environmental Biology (E3B) concentration when selecting elective courses, although selection of a concentration is not required. In addition to coursework, each degree candidate must pass an oral candidacy examination administered by the Supervisory Committee.

#### M.S. Degree: Thesis Track

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At least 16 of the 30 hours required for the degree, including no more than eight hours of thesis research, must be in courses at the 6000-level. The candidate must prepare a written thesis based upon original research acceptable to the Supervisory Committee and the Dean of the Graduate School. Students have the opportunity to conduct their thesis research under the co-direction of a Biology faculty member and select faculty at the Carolinas Medical Center in Charlotte. The student must orally present and successfully defend the thesis to the student's Supervisory Committee in a defense open to the public.

#### M.S. Degree: Non-thesis Track

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At least 12 of the 30 hours required for the degree must be in courses at the 6000-level, including two hours of Tutorial BIOL 6800 culminating in a written assignment developed in consultation with the major advisor. A maximum of two hours of thesis research may be taken as an elective, and students are encouraged to gain research experience. No written thesis or oral thesis defense is required for the non-thesis track.

### Proportion of Courses Open Only to Graduate Students through Departmental Seminars

(these sections remain unchanged)

#### Thesis

~~The candidate must prepare a thesis based upon original research acceptable to the Supervisory Committee and the Dean of the Graduate School. The student must orally present and successfully defend the thesis to the student's Supervisory Committee in a defense that is open to the public.~~

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### Student Teaching

(this section remains unchanged)

### Deadlines/Progression Requirements

- 1) All M.S. students must establish their ~~Thesis~~ Supervisory Committee by the end of the 2<sup>nd</sup> semester.

The Committee must be established before approving the Curriculum Contract and taking the Oral Candidacy exam. For thesis-track students, the Supervisory Committee must also be established before approving ~~either the Curriculum Contract or~~ Thesis Proposal.

- 2) The Curriculum Contract must be approved no later than the end of the 2<sup>nd</sup> semester and preferably by the end of the 1<sup>st</sup> semester.
- 3) The Oral Candidacy exam must be approved before the beginning of the 3<sup>rd</sup> semester. and completion must precede approval of the Thesis Proposal. All required course work for the degree, with the exception of the Tutorial requirement for non-thesis track students and the Research and Thesis for thesis-track students, must be completed before taking the Candidacy Examination. For thesis-track students, completion of the Candidacy exam must precede approval of the Thesis Proposal.
- 4) For thesis-track students, the Thesis Proposal must be approved before the beginning of the 3<sup>rd</sup> semester.
- 5) The student is required to meet with their Supervisory Committee at least once a year.

### Admission to Candidacy

General academic regulations will apply to application for admission to candidacy. In addition to these the applicant should have:

- 1) Removed any identified entrance deficiencies by the time of application
- 2) Successfully completed the Candidacy Examination, which can be taken only after the completion of all required coursework for the degree, with the exception of the Tutorial requirement for the non-thesis track and Research and Thesis for the thesis-track.
- 3) Taken at least 15 hours of graduate work with a GPA of 3.0 or above.
- 4) Satisfied the Supervisory Committee he/she is qualified to become a candidate, i.e., can fulfill the requirements successfully.

### Assistantships

Teaching and research assistantships are available on a competitive basis for qualified students. A limited number of ~~out-of-state and in-state~~ tuition grants are also competitively awarded. Typically, thesis-track M.S. students are prioritized above non-thesis track students for funding awards.

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### Ph.D. in Biology

The Ph.D. in Biology Program has as its intellectual focus an interdisciplinary synthesis of the biological sciences and related biotechnology. In addition to a vigorous research concentration, the program emphasizes the importance of relevant course work. All students are required to complete a series of core courses related to the interdisciplinary nature of the program. Students may choose the Molecular, Cellular and Developmental Biology (MCD) concentration or the Ecology, Evolution and Environmental Biology (E3B) concentration when selecting elective courses, although the selection of a concentration is not required. The cornerstone of the program is the student's research dissertation. (the remainder of this section is unchanged)

**Additional Admission Requirements through Advancement to Candidacy**  
(these sections remained unchanged)

Obtaining the Non-thesis M.S. while completing the Ph.D. degree

Ph.D. students may choose to receive the non-thesis M.S. degree while continuing to work toward the doctoral degree provided they have successfully completed the Candidacy Exam and completed at least 30 hours of coursework, including two hours of Tutorial BIOL 6800 culminating in a written assignment developed in consultation with the student's major advisor. Obtaining the non-thesis M.S. requires dual enrollment in the Ph.D. and M.S. programs. Doctoral students can apply for enrollment in the M.S. program after entering the Ph.D. program.

### **Dissertation through Deadlines/Progression Requirements**

(these sections remain unchanged)

*Proposed new catalog copy*

## **Masters of Science in Biology**

The M.S. in Biology degree program is designed for students who desire to pursue advanced studies in professional and graduate school or various vocational opportunities in biology and related areas (see [biology.uncc.edu/graduate-programs/masters-programs](http://biology.uncc.edu/graduate-programs/masters-programs)). The program provides the opportunity for broad training in a variety of biological areas, as well as specialization in areas of particular interest through the Molecular, Cellular and Developmental Biology (MCD) concentration and the Ecology, Evolution and Environmental Biology (E3B) concentration.

The Department of Biology offers the thesis and non-thesis track within the M.S. degree. The thesis track is designed for students whose career goals include formal research training. The non-thesis track is designed for students whose career goals include graduate education, but not formal research experience. Students may switch between the thesis and non-thesis tracks with written approval from their major advisor and the Graduate Coordinator.

### **Additional Admission Requirements**

(this section remains unchanged)

### **Degree Requirements**

All M.S. students must complete 30 semester hours of course work approved by a Supervisory Committee. Students may choose the Molecular, Cellular and Developmental Biology (MCD) concentration or the Ecology, Evolution and Environmental Biology (E3B) concentration when selecting elective courses, although selection of a concentration is not required. In addition to coursework, each degree candidate must pass an oral candidacy examination administered by the Supervisory Committee.

### **M.S. Degree: Thesis Track**

At least 16 of the 30 hours required for the degree, including no more than eight hours of thesis research, must be in courses at the 6000-level. The candidate must prepare a written thesis based upon original research acceptable to the Supervisory Committee and the Dean of the Graduate School. Students have the opportunity to conduct their thesis research under the co-direction of a Biology faculty member and select faculty at the Carolinas Medical Center in Charlotte. The student must orally

present and successfully defend the thesis to the student's Supervisory Committee in a defense open to the public.

#### **M.S. Degree: Non-thesis Track**

At least 12 of the 30 hours required for the degree must be in courses at the 6000-level, including two hours of Tutorial BIOL 6800 culminating in a written assignment developed in consultation with the major advisor. A maximum of two hours of thesis research may be taken as an elective, and students are encouraged to gain research experience. No written thesis or oral thesis defense is required for the non-thesis track.

#### **Proportion of Courses Open Only to Graduate Students through Departmental Seminars**

(these sections remain unchanged)

#### **Student Teaching**

(this section remains unchanged)

#### **Deadlines/Progression Requirements**

- 1) All M.S. students must establish their Supervisory Committee by the end of the 2<sup>nd</sup> semester. The Committee must be established before approving the Curriculum Contract and taking the Oral Candidacy exam. For thesis-track students, the Supervisory Committee must also be established before approving the Thesis Proposal.
- 2) The Curriculum Contract must be approved no later than the end of the 2<sup>nd</sup> semester and preferably by the end of the 1<sup>st</sup> semester.
- 3) The Oral Candidacy exam must be approved before the beginning of the 3<sup>rd</sup> semester. All required course work for the degree, with the exception of the Tutorial requirement for non-thesis track students and Research and Thesis for thesis-track students, must be completed before taking the Candidacy Examination. For thesis-track students, completion of the Candidacy exam must precede approval of the Thesis Proposal.
- 4) For thesis-track students, the Thesis Proposal must be approved before the beginning of the 3<sup>rd</sup> semester.
- 5) The student is required to meet with their Supervisory Committee at least once a year.

#### **Admission to Candidacy**

General academic regulations will apply to application for admission to candidacy. In addition to these the applicant should have:

- 1) Removed any identified entrance deficiencies by the time of application
- 2) Successfully completed the Candidacy Examination, which can be taken only after the completion of all required coursework for the degree, with the exception of the Tutorial requirement for the non-thesis track and Research and Thesis for the thesis-track.
- 3) Taken at least 15 hours of graduate work with a GPA of 3.0 or above.
- 4) Satisfied the Supervisory Committee the he/she is qualified to become a candidate, i.e., can fulfill the requirements successfully.

#### **Assistantships**

Teaching and research assistantships are available on a competitive basis for qualified students. A limited number of tuition grants are also competitively awarded. Typically, thesis-track M.S. students are prioritized above non-thesis track students for funding awards.

## **Ph.D. in Biology**

The Ph.D. in Biology Program has as its intellectual focus an interdisciplinary synthesis of the biological sciences and related biotechnology. In addition to a vigorous research concentration, the program emphasizes the importance of relevant course work. All students are required to complete a series of core courses related to the interdisciplinary nature of the program. Students may choose the Molecular, Cellular and Developmental Biology (MCD) concentration or the Ecology, Evolution and Environmental Biology (E3B) concentration when selecting elective courses, although the selection of a concentration is not required. The cornerstone of the program is the student's research dissertation. (the remainder of this section is unchanged)

**Additional Admission Requirements through Advancement to Candidacy**  
(these sections remained unchanged)

### **Obtaining the Non-thesis M.S. while completing the Ph.D. degree**

Ph.D. students may choose to receive the non-thesis M.S. degree while continuing to work toward the doctoral degree provided they have successfully completed the Candidacy Exam and completed at least 30 hours of coursework, including two hours of Tutorial BIOL 6800 culminating in a written assignment developed in consultation with the student's major advisor. Obtaining the non-thesis M.S. requires dual enrollment in the Ph.D. and M.S. programs. Doctoral students can apply for enrollment in the M.S. program after entering the Ph.D. program.

**Dissertation through Deadlines/Progression Requirements**  
(these sections remain unchanged)

### **B. Justification**

1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

#### **Creating the Non-thesis Track within the M.S. Degree:**

The Department of Biology is currently reevaluating its graduate curricula in association with developing and implementing Student Learning Outcomes. Our M.A. in Biology program is underutilized and does not have the enrollment to justify its continued existence, and we therefore propose to discontinue it. However, there is a growing number of students (public school teachers; students applying to medical school; etc.) who wish to pursue the M.S. degree, but do not need a formal research component for their career goals. These students consider the M.A. insufficient and prefer a non-thesis M.S. in Biology. We therefore propose to develop two tracks, thesis and non-thesis, within our existing M.S. program. The thesis-track is our current M.S. program and no changes are proposed for this track. The non-thesis track will have the same total credit hour requirements as the thesis-track, but will lack the requirements of a written research thesis and oral thesis defense. The credit hours that thesis-track students devote to thesis research will be filled with additional course work by non-thesis track



students, including two hours of Tutorial BIOL 6800 that culminates in a written assignment to ensure training in scientific writing and synthesizing primary literature.

The non-thesis track will potentially increase student retention, improve time to degree, and benefit the department by increasing the number of M.S. degrees awarded. Students who enter our existing M.S. program (which is thesis only) sometimes discover they are not interested in research or do not have the aptitude for it. Typically, these students do not switch to the M.A., but rather continue struggling with research for several semesters, which wastes student money, departmental resources and faculty time. Also, their continued enrollment in the program hinders the recruitment of new M.S. students by taking up space in faculty research labs. Providing such students with the option of a non-thesis M.S. will allow them to obtain the degree within a two-year time period, decrease the likelihood of dropping out of the program, increase the total degrees awarded per year, and enhance our ability to recruit new M.S. students.

Non-thesis M.S. programs in biology are widespread. A quick perusal of the Internet revealed the following universities that offer a non-thesis M.S. in biology or the biological/environmental sciences (\* designates a peer institution; Of the 17 peer institutions recognized for UNCC [<http://ir.uncc.edu/peer-institutions> ], 12 offer a non-thesis M.S. in biology):

- Case Western
- Clemson University, Dept. Biological Sciences
- \*Florida Atlantic University
- \*Florida International University
- Georgia Southern University
- Georgia Tech.
- Indiana University-Purdue University Indianapolis
- North Carolina State Univ.; Dept. of Biology
- \*Old Dominion University
- Southern Louisiana University
- Tennessee State University
- Texas A&M University, Marine Biology
- Texas Tech. University, Dept. Biological Sciences
- \*University of Colorado at Denver
- University of Louisiana at Lafayette
- \*University of Louisville
- \*University of Massachusetts at Lowell
- \*University of New Mexico
- University of South Florida, Cellular and Molecular Biology
- \*University of Toledo
- \*University of Texas at Arlington
- \*University of Texas at San Antonio
- University of West Florida
- University of West Georgia
- \*University of Wisconsin at Milwaukee
- Western Kentucky University
- \*Western Michigan University

We also propose to provide Ph.D. students with the opportunity to receive the non-thesis M.S. degree while continuing to work toward the doctoral degree. Doctoral students will not be required to pursue this opportunity, but we wish to make it available to them if they are interested. To receive the non-thesis M.S. while in the doctoral program, a student must apply for enrollment in the M.S. program,



have passed the Candidacy Exam, and completed at least 30 hours of graduate course work, including two hours of Tutorial BIOL 6800 culminating in a written assignment, which typically will take the form of a review article on a topic related to their dissertation research. Conversations with the Graduate School have revealed that doctoral students can apply for dual enrollment in the M.S. program at any time after entering the Ph.D. in Biology program.

There are several advantages to giving doctoral students the opportunity to earn the non-thesis M.S. as part of their Ph.D. program. First, it enhances their résumé. Second, it makes them eligible to be hired as the instructor-of-record for lecture courses at UNCC and other institutions, if they wish to gain additional teaching experience while completing the dissertation. This, in turn, will improve their teaching skills and make them more competitive for academic positions. Providing the opportunity for the non-thesis M.S. to doctoral students will also increase the number of graduate degrees awarded. Lastly, students who discover they are not interested in research after entering the Ph.D. program can opt for the non-thesis M.S., thereby allowing them to earn a graduate degree and giving the department a return on its investment in resources and faculty time.

#### **Establishing Concentrations with the M.S. and Ph.D. Degrees:**

The primary benefit for establishing the Molecular, Cellular and Developmental Biology (MCD) concentration and the Ecology, Evolution and Environmental Biology (E3B) concentration is to facilitate student recruitment. Many biology departments in other universities have identical or very similar concentrations within their graduate programs. Incorporating the terminology into our graduate websites will increase our chances of attracting the attention of potential students when they conduct online searches for possible programs. During the past several years, we have been outcompeted for high-quality students by other universities, in part because our support packages are less competitive, and in part because we lack the visibility of other institutions. Last year the Department of Biology restructured its graduate stipends to increase our competitiveness. We now propose to establish concentrations and advertise these on our websites to enhance our visibility and increase the number of “hits” on our websites by prospective students. For example, a Google search for “E3B graduate programs” or “Ecology, Evolution and Environmental Biology graduate programs” generated over 10,000 hits, including programs at Columbia University, Rutgers University, Purdue, Georgetown University, Notre Dame, Emory, University of Illinois, Appalachian State, etc. Similar results are obtained for Google searches for “MCD graduate programs.”

Establishing the concentrations within the M.S. and Ph.D. programs will also facilitate advising students on elective hours when developing their curriculum contracts. Although M.S. and Ph.D. students will not be required to select a concentration when choosing elective courses, the concentrations will provide a framework for identifying courses within biology and available through other departments and colleges that may be appropriate for individual students’ research interests, as well as identify gaps in the Biology Department graduate curriculum. Establishing the concentrations will also send a clear statement to prospective students of the main research foci within the Department of Biology.

Our intent is for the concentrations to remain flexible, to accommodate the specific interests of individual students. As such, the same course may be equally appropriate for students pursuing the MCD or E3B concentration, depending upon their specific research interests. A student will select elective courses within a concentration in consultation with his/her major advisor and Dissertation Committee. We may ultimately designate 1-2 specific “focus courses” that all students within a

concentration will be required to take, to ensure continuity of training. However, we wish to first establish the concentrations based on existing courses and then explore more formal requirements as the concentrations develop.

On the following page, we provide a table of all existing 5000/6000/8000 elective biology courses and how they may pertain to the MCD and E3B concentrations. Please note that the table is presented only as one possible example for categorizing existing elective courses, rather than a definitive listing. Advisors and committees will work with students to determine the specific courses that will comprise a concentration tailored for an individual student's specific area of study.

Table 1: A possible example of how existing biology graduate elective courses may pertain to the MCD and E3B concentrations. \* indicates courses that may apply equally to both concentrations. Students can petition to have any course count toward a chosen concentration if the Dissertation Committee feels it is appropriate for the student's research area.

<b>MCD concentration</b>	<b>E3B concentration</b>
<b>5000-level</b>	<b>5000-level</b>
*BIOL 5000 Advanced Topics in Biology	*BIOL 5000 Advanced Topics in Biology
*BIOL 5121 Biometry	*BIOL 5121 Biometry
*BIOL 5162 Advanced Biotechnology I	*BIOL 5162 Advanced Biotechnology I
*BIOL 5163 Advanced Biotechnology II	*BIOL 5163 Advanced Biotechnology II
*BIOL 5168 Recombinant DNA techniques	*BIOL 5168 Recombinant DNA techniques
*BIOL 5189 Mechanisms of Development	*BIOL 5189 Mechanisms of Development
*BIOL 5150 & 5150L Microbiology and Lab	*BIOL 5150 & BIOL 5150L Microbiology and Lab
*BIOL 5277 Endocrinology	*BIOL 5277 Endocrinology
*BIOL 5282 & 5282L Developmental Plant Biol. & Lab	*BIOL 5282 & 5282L Developmental Plant Biol. & Lab
*BIOL 5283 & 5283L Animal Development & Lab	*BIOL 5283 & 5283L Animal Development & Lab
BIOL 5171 Cell Physiology	BIOL 5111 Evolution
BIOL 5233 Parasitology	BIOL 5144 Advanced Ecology
BIOL 5250 & 5250L Immunology & Lab	BIOL 5184 Plant Biotechnology
BIOL 5254 Epidemiology	BIOL 5235 Mammalogy
BIOL 5255 Bacterial Genetics	BIOL 5242 & 5242L Biology of Birds & Lab
BIOL 5256 & 5256L Pathogenic Bacteriology & Lab	BIOL 5243 Animal Behavior
* BIOL 5257 Microbial Physiology and Metabolism	* BIOL 5257 Microbial Physiology and Metabolism
BIOL 5259 & 5259L Virology & Lab	BIOL 5244 Conservation Biology
BIOL 5292 Advances in Immunology	BIOL 5253 Marine Microbiology
	BIOL 5260 Population Genetics
	BIOL 5293 Comparative Vertebrate Anatomy
<b>6000-level</b>	<b>6000-level</b>
*BIOL 6000 Special Topics in Biology	*BIOL 6000 Special Topics in Biology
*BIOL 6102 Cell and Molecular Biology	*BIOL 6102 Cell and Molecular Biology
BIOL 6103 Immunology of Infection	
BIOL 6104 Integrative Systems Physiology	
BIOL 6273 Advanced Human Physiology	
BIOL 6274 Advanced Human Pathophysiology	
<b>8000-Level</b>	<b>8000-Level</b>
*BIOL 8000 Special Topics in Biology	*BIOL 8000 Special Topics in Biology
*MEGR 8109 Biotechnology & Bioengineering	*MEGR 8109 Biotechnology & Bioengineering
*PHYS 8101 Biophysics	*PHYS 8101 Biophysics
BIOL 8010 Special Topics in Microbiology	
BIOL 8103 Immunology of Infection	
BIOL 8104 Integrative Systems Physiology	

2. Discuss prerequisites/corequisites for courses including class standing.

No new courses are proposed for creating the non-thesis M.S. or for establishing the concentrations within the graduate programs. As such, no revisions are proposed for the prerequisites/corequisites for our existing courses. All students pursuing the non-thesis M.S. must be enrolled in the M.S. program. Doctoral students who choose to obtain the non-thesis M.S. while simultaneously pursuing the Ph.D. must have dual enrollment.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

No revisions to the course numberings are proposed.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

Creating the non-thesis M.S. track within our existing M.S. program will increase student retention, by enabling graduate students who lack the interest or aptitude in research to obtain the M.S. degree. The M.S. is preferable to the M.A. for many students who seek graduate education but do not need formal research training. By enabling more students to complete the degree within the two-year period allotted to the M.S. program, the non-thesis M.S. will improve time to degree, thereby resulting in a better use of student money, departmental resources and faculty time. It will also potentially increase the number of M.S. awarded and open up spaces in faculty research labs faster, which will facilitate the recruitment of more students. Allowing doctoral students to obtain the non-thesis M.S. while pursuing the Ph.D. will enhance their résumés and make them eligible to pursue instructor-of-record teaching opportunities to increase their teaching skills.

Establishing the MCD and E3B concentrations will increase our visibility and ability to attract students. The concentrations will also enhance student advising for the selection of elective courses, facilitate curricular development and communicate the major research foci within the department.

### C. Impact

1. What group(s) of students will be served by this proposal? Describe how you determined which students will be served.

The creation of the non-thesis track within the Biology M.S. degree will serve three main groups of students:

- Students who need graduate level course work to pursue their career goals, but who do not need formal research training: We expect the non-thesis track within the M.S. will be most attractive to public school teachers, whose career advancement requires the M.S. degree, but not necessarily thesis research. We receive numerous inquiries from public school teachers who wish to pursue graduate education, but do not have the time or need to conduct thesis research and whose supervisors prefer the M.S. over the M.A. degree. The non-thesis M.S. track is ideal for these students. The non-thesis track will also benefit students who wish to attend medical school. Admission into medical school is enhanced by completing graduate level coursework, but is little affected by conducting thesis research.

- Students who discover they have no interest in or aptitude for research after entering the M.S. program: Such students rarely switch to the M.A. program, which is considered a lesser degree. Typically, such students struggle for years to complete the research before dropping out of the program without receiving the degree or finally completing the M.S. degree only after the expenditure of a great deal of personal money, departmental resources and faculty time. The non-thesis M.S. will give such students the opportunity to complete the M.S. degree within the allotted two years, with considerable savings to everyone involved.
- Doctoral students who chose to obtain the non-thesis M.S. while pursuing the Ph.D.: Although obtaining the non-thesis M.S. will be strictly optional and require dual enrollment in the M.S. and Ph.D. program, making the opportunity available to Ph.D. students will improve their résumés and make them eligible to apply for lecturer positions, thereby potentially increasing their teaching experience.

The establishment of the MCD and E3B concentrations will benefit both M.S. and Ph.D. students, by promoting recruitment, facilitating advising for elective courses, and advertizing the two main research foci within the department.

## 2. What effect will this proposal have on existing courses and curricula?

### a. *When and how often will the added course be taught?*

No new courses or changes to course offerings are proposed. We offer sufficient 5000/6000 level courses each semester for both thesis track and non-thesis track M.S. students to complete the required 30 hours of coursework within two years.

The proposed MCD and E3B concentrations are intended to organize existing 5000/6000/8000 level elective courses for the purposes of recruiting and advising students. No new courses are necessary to establish the concentrations within the M.S. and Ph.D. programs.

### b. *How will the content and/or frequency of offering of other courses be affected.*

We do not anticipate that creating the non-thesis M.S. will affect the content or frequency of offering of other courses. The Department of Biology already offers sufficient 5000/6000 level courses for thesis M.S. students to complete all required formal coursework within two years. Non-thesis M.S. student will replace the eight hours of Thesis Research taken by thesis M.S. students with two hours of Tutorial (BIOL 6800; independent instruction supervised by the major advisor) and six hours of additional course work. The department offers sufficient 5000/6000 level courses each semester to easily accommodate the extra course requirements without altering the frequency of course offerings.

### c. *What is the anticipated enrollment in the courses added?*

No courses will be added. Enrollment in existing 5000/6000 level courses is expected to increase by 3-5 students/semester, to accommodate the increased formal coursework requirement for non-thesis M.S. students.

### d. *How will enrollment in other courses be affected? How did you determine this?*

Enrollment in existing 5000/6000 level courses is expected to increase by 3-5 students/semester, to accommodate the increased formal coursework requirement for non-thesis M.S. students. The Department of Biology typically has 20-25 students enrolled in the M.S. program each semester. Given student progression and graduation records over the past five years, we anticipate that 3-5 students will opt for the non-thesis track M.S. degree each year and these students will typically take one additional course during each of 2-3 semesters to replace the hours associated with the thesis requirement.

The establishment of the MCD and E3B concentrations within the M.S. and Ph.D. programs is not expected to have any effects on enrollment. No new or additional course requirements are associated with establishing the concentrations. Their purpose is to organize the curriculum to facilitate recruitment and advising.

*e. If the course has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.*

NA

*f. Identify other areas of catalog copy that would be affected, e.g., curriculum outlines, requirements for degree, etc.*

None. The changes to catalog copy associated with creating the non-thesis M.S. track and the MCD and E3 B concentrations will be as indicated in **2. Proposed Catalog Copy**.

#### **D. RESOURCES REQUIRED TO SUPPORT PROPOSAL**

##### 1. Personnel

a. *New faculty...*

No new faculty are required.

b. *Qualified faculty members interested in teaching the course.*

No new courses are proposed.

##### 2. Physical Facility

None required beyond existing classrooms.

##### 3. Equipment and Supplies

No additional equipment and supplies are required.

##### 4. Computer

No additional computing resources are required.

5. Audio

No equipment or services will be needed from Media Services

6. Other Resources

None

7. Sources of Funding

No new funding required.

**E. CONSULTATION WITH THE LIBRARY AND OTHER DEPARTMENTS/UNITS**

1. Library Consultation

Not required (see attached email from Dr. Rob McGregor).

2. Consultation with Other Departments and Units

Students in our M.S. program may take courses in other units (i.e. Geography and Earth Science; Bioinformatics) with the approval of their Supervisory Committees. We therefore requested input from these two departments for the proposed changes on November 6, 2012. Bioinformatics responded positively on November 12, 2012 (see attached letter from Dr. Larry Mays). Geography and Earth Science did not respond

The Ph.D. in Biology program has an interdisciplinary approach that involves faculty from the departments of Chemistry, Kinesiology, Mechanical Engineering, Public Health Sciences, Anthropology, Physics and Optical Sciences, and the Carolinas Medical Center. We have a Doctoral Advisory Panel composed of faculty representatives from the participating units, which functions to provide input to the Biology Graduate Committee about doctoral program matters. The members of the Advisory Panel (Dr. Jerry Troutman, Chemistry; Dr. Farah Bahrani, CMC; Dr. Eric Wikstrom, Kinesiology; Dr. Gloria Elliott, Mechanical Engineering; Dr. Andrew Harver, Public Health Sciences; Dr. Diane Brockman, Anthropology; and Dr. Irina Nesmelova; Physics and Optical Sciences) were informed of the proposed changes on November 9, 2012. Four members of the Advisory Panel responded and all supported the proposed changes (see attached letters from Dr. Erik Wikstrom, Kinesiology; Dr. Farah Mougeot, CMC; Dr. Andrew Harver, Public Health Sciences; and Dr. Diane Brockman, Anthropology).

**F. INITIATION AND CONSIDERATION OF THE PROPOSAL**

1. Originating Unit

The Biology Graduate Faculty approved the proposed changes on Oct. 24, 2012. Ballots were distributed to the Biology Graduate Faculty and showed broad support for creating the non-thesis track within the M.S. (12 in favor; 2 opposed) and establishing the MCD and E3B concentrations within the graduate programs (11 in favor; 1 opposed).



2. Other Considering Units

see E-2

**G. Attachements**

1. *Consultation with other units*

Copies of the email responses received from the outside departments and Doctoral Advisory Panel are attached.

2. *Course syllabus*

No new courses are proposed.

Hi Stan,

May apologies for this tardy response to your request for review/input. I have reviewed this proposed curriculum change to the Biology M.S. program, and have no suggested changes/edits. It appears to be a reasonable and hopefully effective mechanism for addressing the issue of an underutilized M.S. degree in Biology.

All the best,  
Diane

DIANE K. BROCKMAN, PHD  
ASSOCIATE PROFESSOR  
DEPARTMENT OF ANTHROPOLOGY  
DIRECTOR AND COORDINATOR OF THE BEZA MAHAFALY SIFAKA RESEARCH PROGRAM--U.S.  
UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE  
9201 UNIVERSITY CITY BLVD.  
CHARLOTTE, NC 28233-0001  
PHONE: 704.687.6864  
FAX: 704.687.3209

**From:** Schneider, Stan

**Sent:** Thursday, November 15, 2012 11:51 AM

**To:** Brockman, Diane; Elliott, Gloria; Gordon, Scott; Harver, Andrew; Nesmelova, Irina; Troutman, Jerry; Wikstrom, Erik

**Subject:** FW: RE: curriculum proposal from Biology

Dear Biology PhD Doctoral Advisory Panel members,

I am resending the long-form curriculum proposal if you wish to provide input. We would like to submit the proposal soon, so if you have comments or questions could you please get them to me by Monday, Nov. 19 if you haven't already done so? Thanks. Stan

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

**From:** Schneider, Stan

**Sent:** Tuesday, November 06, 2012 9:11 AM

**To:** 'Bahrani-Mougeot, Farah K'; Brockman, Diane; Elliott, Gloria; Gordon, Scott; Harver, Andrew; Nesmelova, Irina; Troutman, Jerry; Wikstrom, Erik

**Subject:** RE: curriculum proposal from Biology

Dear Doctoral Advisory Panel members,

The department of biology has recently voted to create a non-thesis track within the M.S. degree and to establish two concentrations (Molecular, Cellular and Developmental Biology; Ecology, Evolution and Environmental Biology) within the M.S. and Ph.D. degree. I am sending the long-form curriculum proposal for these changes for your input, because we want to make the non-thesis M.S. available to

doctoral students while working toward the Ph.D. degree. Thus, we would like to get comments from the Advisory Panel.

Please let me know if you have questions. Thanks. Stan

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

Looks fine Stan – thanks for sharing.  
andrew

**From:** Schneider, Stan  
**Sent:** Thursday, November 15, 2012 11:51 AM  
**To:** Brockman, Diane; Elliott, Gloria; Gordon, Scott; Harver, Andrew; Nesmelova, Irina; Troutman, Jerry; Wikstrom, Erik  
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**Sent:** Tuesday, November 06, 2012 9:11 AM  
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Please let me know if you have questions. Thanks. Stan

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

Dear Stan,  
Bioinformatics and Genomics has no comments, objections, or suggestions regarding your proposed curriculum changes. We thank you for offering us the opportunity to provide input, however.  
Larry Mays  
Chair

**From:** <Schneider>, Stan <[sschnedr@uncc.edu](mailto:sschnedr@uncc.edu)>  
**Date:** Tuesday, November 6, 2012 10:05 AM  
**To:** "Allan, Craig" <[cjallan@uncc.edu](mailto:cjallan@uncc.edu)>, Lawrence Mays <[lemays@uncc.edu](mailto:lemays@uncc.edu)>  
**Subject:** RE: biology curriculum proposal

Dear Craig and Larry,

Could you please forward the attached curriculum proposal to your departmental graduate committees for input? Biology is proposing to create a non-thesis track within the M.S. degree and to establish concentrations (the Molecular, Cellular and Developmental biology concentration and the Ecology, Evolution and Environmental Biology concentration) within our graduate programs. Although these changes are unlikely to have an impact on any students other than biology graduate students, we'd like to get input from your departments, because our students sometimes take courses within your programs for the biology M.S. degree.

I'd appreciate it if you could submit comments by **Thursday, Nov. 15, 2012**.

Thank you. Stan

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

Stan,

Your response is exactly what I had assumed about BIOL's plan but I thought it couldn't hurt to mention it. Please let me know if there is anything else that I can do to help.

Erik

---

Erik Wikstrom, PhD, ATC, FACSM | Assistant Professor  
UNC Charlotte | Department of Kinesiology  
9201 University City Blvd. | Charlotte, NC 28223  
Phone: 704-687-0871 | Fax: 704-687-0930  
[ewikstrom@uncc.edu](mailto:ewikstrom@uncc.edu) | <http://www.kinesiology.uncc.edu>

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**From:** Schneider, Stan  
**Sent:** Friday, November 09, 2012 9:07 AM  
**To:** Wikstrom, Erik  
**Subject:** RE: RE: curriculum proposal from Biology

Thanks Eric, good suggestion. And, easy to incorporate because we made such a table for BIOL courses when presenting the proposal to the biology graduate faculty. We already see that a number of BIOL courses are equally applicable to both concentrations and the same will be true for courses in other departments that might be relevant for our program. I don't want to list all of these in the curriculum proposal, because we envision the course work a student will take for an concentration as being very fluid. A student can count just about any elective course toward the MCD or E3B concentration, with the approval of the major advisor, dissertation committee and graduate coordinator. The same course could easily be appropriate for a MCD and E3B student, depending on their research area. We want this to be as flexible as possible, to allow students to tailor their individual curriculum to their specific interests. We may eventually want all students within a given track to take 1-2 "focus" courses (basically, required courses for all students within a track), but even for those we can always allow substitutions through special request.

Thanks for your input.

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

**From:** Wikstrom, Erik  
**Sent:** Thursday, November 08, 2012 4:22 PM  
**To:** Schneider, Stan  
**Subject:** RE: RE: curriculum proposal from Biology



Stan,

Overall, the proposal looks really good and the justifications are very well written. I have one suggestion and a couple of questions for you and/or the faculty.

Suggestion: Provide a table and/or illustration of how elective courses might fit within the two proposed concentrations. For example, which current Biology courses and/or approved non-biology courses would fall into the proposed concentrations? I think this will help grad council better visualize the process and probably remove any questions that they have about the revised curriculum.

My questions go back to my suggestion. Which courses will fall into the two concentrations? Will the proposed concentrations negatively impact doctoral students that are not based in Biology (e.g. a KNES student or an Anthropology student) by limiting the number of available elective courses because those courses fall outside of the CMD or E3B course list? Do the number of electives within each concentration remain the same as the current curriculum?

I am sure that you all have already thought through these questions but I didn't see the answers in the proposal. Adding those responses will probably reduce questions by grad council. Hope this helps and please let me know if you need me to clarify anything.

Erik

-----  
 Erik Wikstrom, PhD, ATC, FACSM | Assistant Professor  
 UNC Charlotte | Department of Kinesiology  
 9201 University City Blvd. | Charlotte, NC 28223  
 Phone: 704-687-0871 | Fax: 704-687-0930  
[ewikstrom@uncc.edu](mailto:ewikstrom@uncc.edu) | <http://www.kinesiology.uncc.edu>  
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**From:** Schneider, Stan

**Sent:** Tuesday, November 06, 2012 9:11 AM

**To:** 'Bahrani-Mougeot, Farah K'; Brockman, Diane; Elliott, Gloria; Gordon, Scott; Harver, Andrew; Nesmelova, Irina; Troutman, Jerry; Wikstrom, Erik

**Subject:** RE: curriculum proposal from Biology

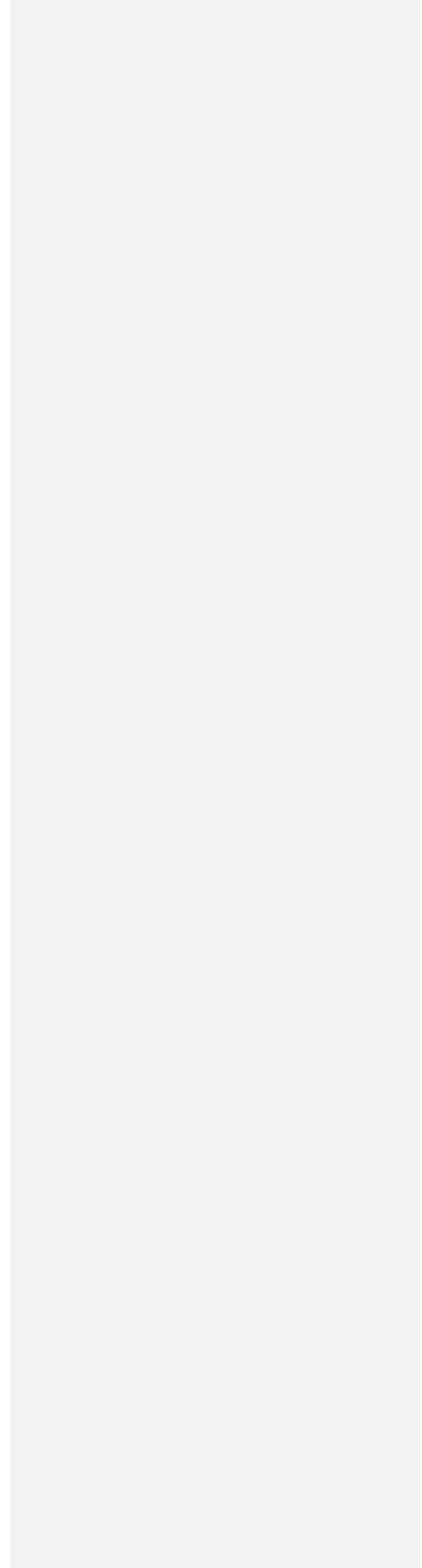
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Please let me know if you have questions. Thanks. Stan

Dr. Stan Schneider

Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128



Hey Farah,

Non-thesis track M.S. students must successfully complete the oral exam and a 2 hour writing requirement (Tutorial) to receive the degree. So, they are tested on their general knowledge (exam) and knowledge of a particular area (written component). CMC faculty could still serve as the major advisor for a non-thesis M.S. student. Thanks

Dr. Stan Schneider  
Graduate Coordinator  
Department of Biology  
University of North Carolina  
Charlotte, NC 28223  
Phone: 704-687-8527  
FAX: 704-687-3128

**From:** Mougeot, Farah K [<mailto:Farah.Mougeot@carolinashealthcare.org>]  
**Sent:** Wednesday, November 07, 2012 12:05 PM  
**To:** Schneider, Stan  
**Subject:** RE: curriculum proposal from Biology

Dear Stan,

I do not have a problem with replacing the M.A. with a non-thesis M.S. program. However, I have 2 comments/questions: 1. How will those students be evaluated for their knowledge gained other than through the course work? I had an M.A. student few years ago. It was nice that he had to do a thesis. He did a review of literature in the field which was the focus of research in my lab for his thesis. By writing a thesis, he gained great knowledge in the field which helps him with his career in dentistry. 2. Based on these new changes, students can not do a non-thesis M.S. with CMC faculty?

Thanks. Farah

Farah Mougeot, Ph.D  
Senior Scientist, Cannon Research Center, Carolinas Medical Center  
Adjunct Associate Professor and Associate Graduate Faculty, UNC-Charlotte  
1000 Blythe Blvd.  
P.O. Box 32861  
Charlotte, NC 28232  
Tel. 704-355-8132  
Email: [farah.mougeot@carolinas.org](mailto:farah.mougeot@carolinas.org)

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**From:** Schneider, Stan [<mailto:sschnedr@uncc.edu>]  
**Sent:** Tuesday, November 06, 2012 9:11 AM  
**To:** Mougeot, Farah K; Brockman, Diane; Elliott, Gloria; Gordon, Scott; Harver, Andrew; Nesmelova, Irina; Troutman, Jerry; Wikstrom, Erik  
**Subject:** RE: curriculum proposal from Biology

Dear Doctoral Advisory Panel members,

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Please let me know if you have questions. Thanks. Stan

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I'd appreciate it if you could submit comments by **Thursday, Nov. 15, 2012**.

Thank you. Stan

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University of North Carolina  
Charlotte, NC 28223  
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If the proposal does not involve any new courses, then there is no need to include a library consultation.

Rob Roy McGregor  
Professor of Economics  
Coordinator of MS in Economics Program  
Department of Economics  
UNC Charlotte  
9201 University City Boulevard  
Charlotte, NC 28223  
Phone 704-687-7639  
Fax 704-687-1384

**From:** Schneider, Stan  
**Sent:** Monday, November 05, 2012 2:52 PM  
**To:** McGregor, Rob  
**Subject:** RE: biology curriculum proposal

Hey Rob,

I emailed you earlier that Biology is putting together a long-form curriculum proposal to (1) create a non-thesis concentration within the M.S. degree and (2) establish two concentrations (Molecular, Cellular and Developmental Biology; Ecology, Evolution and Environmental Biology) within the M.S. and Ph.D. degrees. Neither of these changes involves the creation of new courses or new facilities. Consequently, do we need to include a consultation with the library? If so, I'm not sure what we would ask them to provide input about. Thanks. Stan

Dr. Stan Schneider  
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Department of Biology  
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