

**UMBC UGC Change in Existing Course: BIOL 410 Modeling in the Life Sciences**

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Proposed Effective Date: Spring 2016

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**COURSE INFORMATION:** (please provide all information in the “current” column, and only the information changing in the “proposed” column)

change		current	proposed
<input type="checkbox"/>	Course Number(s)	BIOL 410	
<input type="checkbox"/>	Formal Title	Modeling in the Life Sciences	
<input type="checkbox"/>	Transcript Title (≤30c)	Modeling in the Life Sci	
<input checked="" type="checkbox"/>	Recommended Course Preparation	BIOL 142, CHEM 101 and [STAT 350 or MATH 151 or MATH 155]	
<input checked="" type="checkbox"/>	Prerequisite <b>NOTE:</b> Unless otherwise indicated, a prerequisite is assumed to be passed with a “D” or better.		BIOL 142, BIOL 302, BIOL 303, CHEM 101 and [STAT 350 or MATH 151 or MATH 155] with a grade of “C” or better.
<input type="checkbox"/>	Credits	4.00	
<input type="checkbox"/>	Repeatable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Max. Total Credits	4.00	<b>Max. Total Credits:</b> This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.
<input type="checkbox"/>	Grading Method(s)	<input checked="" type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail	<input type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail

**CURRENT CATALOG DESCRIPTION:**

Humans possess a superior ability to generate new knowledge by extrapolating from past experiences and creating and manipulating abstract models. This natural ability reaches its full potential when it is enhanced with the scientific tools of experimental design, mathematics, logic, and computer simulation. BIOL 412 will be offered as an introduction to the science (and art) of creating and using quantitative models. It will include classroom lectures, activities and computer-based exercises intended to illustrate and implement the five basic elements of scientific modeling: experimental design, data acquisition and analysis, model formulation, and simulation. The primary objective of this course will be to engage students in an environment structured to use quantitative models to solve practical problems in biology and biochemistry. This course will not have as objectives to teach formal mathematics, computer programming, or computer science.

**PROPOSED CATALOG DESCRIPTION** (no longer than 75 words): leave blank if no changes are being proposed to the catalog description. NOTE: information about prerequisites should NOT appear in the catalog description.)

**RATIONALE FOR CHANGE:**

The BIOL core courses are in a sequence BIOL 141-> BIOL 142 -> BIOL 302 -> BIOL 303, with BIOL 303 serving as a capstone course for the Biology core. The curriculum was designed such that only after completing this course and showing

mastery of the core course content, would students move on in the major and take 400 level courses. However, we have a number of 400 level courses offered that do not explicitly require the content of BIOL 303 for student success in the course and therefore do not currently have it listed as an academic prerequisite. Some students have been taking these courses before completing BIOL 303 and the core, and some of these students have gone on to fail BIOL 303 two times, showing that they do not have mastery of the material and perhaps should be in another major. We would like to make BIOL 303 a prerequisite for all of our 400 level courses, regardless of content, to make this maneuver impossible. We prefer students to show they should be in the major before taking these upper level courses.”