

UMBC UGC Change in Existing Course: BIOL 463 – Theoretical and Quantitative Biology

Date Submitted: September 2015

Proposed Effective Date: Spring 2016

| | Name | Email | Phone | Dept |
|-------------------|------------------|--|--------------|---------|
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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 463 | |
| <input type="checkbox"/> | Formal Title | Theoretical and Quantitative Biology | |
| <input type="checkbox"/> | Transcript Title (≤30c) | Theoretical and Quantitative Biology | |
| <input checked="" type="checkbox"/> | Recommended Course Preparation | STAT 350 and BIOL 301 | You must have completed BIOL 142, BIOL 302, BIOL 303 and STAT 350 with a grade of “C” or better. |
| <input checked="" type="checkbox"/> | Prerequisite NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a “D” or better. | | You must have completed BIOL 142, BIOL 302, BIOL 303 and STAT 350 with a grade of “C” or better. |
| <input type="checkbox"/> | Credits | 4.00 | |
| <input type="checkbox"/> | Repeatable? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> | Max. Total Credits | 4.00 | Max. Total Credits: 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:

A course in probability and advanced biostatistics. Topics will include the elementary mathematical techniques used in biology and medicine, the relationships among probability distributions used in standard statistical tests, univariate linear and nonlinear analysis, correlation matrices, multivariate analysis and path analysis, cluster analysis, and discriminant and principal component analysis. Students will present examples of the analysis from the literature. The class will solve problems, and each student will analyze a set of experimental data. Recommended Preparation: [STAT 350](#) and [BIOL 301](#).

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.)

A course in probability and advanced biostatistics. Topics will include the elementary mathematical techniques used in biology and medicine, the relationships among probability distributions used in standard statistical tests, univariate linear and nonlinear analysis, correlation matrices, multivariate analysis and path analysis, cluster analysis, and discriminant and principal component analysis. Students will present examples of the analysis from the literature. The class will solve problems, and each student will analyze a set of experimental data.

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."