

## UMBC UGC New Course Request: BIOL 429: Advanced Topics in Molecular Biology

Date Submitted: 9/19/2018 (updated 10/11/2018)

Proposed Effective Date: Spring 2019

|                   | Name             | Email  | Phone  | Dept |
|-------------------|------------------|--|--------|------|
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### COURSE INFORMATION:

|   |   |
|---|---|
| Course Number(s)  | BIOL 429  |
| Formal Title  | Advanced Topics in Molecular Biology  |
| Transcript Title (≤30c)   | Topics in Molecular Biology   |
| Recommended Course Preparation  |   |
| Prerequisite<br><b>NOTE:</b> Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better. | BIOL 302 and BIOL 303, both with a grade of "C" or better.  |
| # of Credits<br>Must adhere to the <a href="#">UMBC Credit Hour Policy</a>  | 4.00  |
| Repeatable for additional credit?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   |
| Max. Total Credits  | 16.00 <small>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.</small> |
| Grading Method(s)   | <input checked="" type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail   |

### PROPOSED CATALOG DESCRIPTION (Approximately 75 words in length. Please use full sentences.):

This advanced course analyzes principles of and current topics in molecular biology, which concerns the study of biology at the molecular level and focuses on the structure, function and regulation of macromolecules including DNA, RNA and proteins. Topics will vary across semesters according to current research and the interests of faculty. Representative topics may include: technological advances in molecular biology and biotechnology, genome editing, gene therapy, genetically-modified organisms, and the molecular genetics of human disease. The course is a mix of lectures, problem-based learning, and student-led presentations of articles from the primary research literature.

### RATIONALE FOR NEW COURSE:

The Department of Biological Sciences currently offers Advanced Topics courses in Cell Biology, Comparative Physiology, Developmental Biology, and Evolutionary Biology, but we do not currently offer an option for molecular biology. By adding a topics course in molecular biology, we wish to expand the electives available to our majors. Upon completion of the four "core" courses in the biology curriculum, students then have multiple choices for intermediate and upper-level elective courses.

Upper level classes in this sub-discipline are underrepresented, but the few available are very popular and consistently reach, if not exceed, enrollment capacity. Additional classes of this topic are clearly in demand. This course would also provide flexibility for faculty in the department who specialize in molecular biology, allowing faculty to stay abreast of recent developments in the field while offering student an opportunity to engage in this dynamic field. This course will be offered on an ad hoc basis, at the discretion of new and existing faculty interests.

The material covered is advanced and uses critical analysis of the current scientific literature at an accelerated pace, with only some review of foundational principles that can be found in other courses, making it a 4XX-level course. The pre-requisites for this course include BIOL 302 – Genetics & Molecular Biology and BIOL 303 – Cell Biology. All BIOL 4XX-level courses have BIOL 302 and BIOL 303, the last two upper-level lecture courses needed for the Biology Core, as a pre-req. We would like to keep those 4XX-level pre-reqs consistent for all BIOL courses.

This course is designed with the standard A-F grading scale, with appropriate emphasis on exams, in-class work, problem sets, and presentations. Finally, the course will use the established student-centered pedagogical techniques already in existing departmental course offerings (see Student Assessment section of syllabus). Course is repeatable for credit, as long as different topics are taken.

**ATTACH COURSE SYLLABUS (mandatory):**

See attached for example syllabus.