UNIVERSITY OF MARY WASHINGTON -- NEW COURSE PROPOSAL

Electronically submit this completed form with attachments in one file to the Chair of the College Curriculum Committee.

COLLEGE (check one):  Arts and Sciences X  Business  Education
Proposal Submitted By: Andrew Dolby  Date Prepared: 10/08/2015
Course Title:  Topics in Biology: Research Intensive
Department/discipline and course number*:  BIOL 472

*This course number must be approved by the Office of the Registrar before the proposal is submitted.

Number of credits proposed: 4  Prerequisites: BIOL 126 or 132 (C- or better) and BIOL 260 (C- or better); additional prerequisites as appropriate to topic.

Will this be a new, repeatable “special topics” course? (Do you want students to be able to take this new course more than once if the topic changes?)  NO  YES X

Date of first offering of this new course: FALL SEMESTER, year 2016
Proposed frequency of offering of the course: Once per year for approximately 4 years; sporadic thereafter depending on faculty turnover and new developments in biology education and student/ market demand for new research intensive course topics

List the faculty who will likely teach the course: All biology faculty
Are ANY new resources required?  NO  X  YES  Document in attached impact statement

This new course will be (check all that apply):
Required in the major
Elective in the major  X  General Education**

**AFTER the new course is approved, a separate proposal must be sent to the General Education Committee.

Catalog Description:
Prerequisites: BIOL 126 or 132, and BIOL 260 (C- or better in each course); additional prerequisites as appropriate to specific topic. Specialized topics not offered on a regular basis. Requires a significant independent research project conducted individually or in groups. Fulfills the Research Intensive requirement of the biology major. Laboratory.

COURSE HISTORY
Was this course taught previously as a topics or experimental course?  YES  NO  X
Course Number and Title of Previous Course
Semester Offered  Enrollment

CHECK HERE if the proposed course is to be equated with the earlier topics or experimental offerings. This means that students who took the earlier “topics” course will only be able to take the new course if they made a C- grade or lower in the earlier course.

NOTE: If the proposed course has not been previously offered as a topics or experimental course, explain in the attached rationale statement why the course should be adopted even though it has not been tried out.

REQUIRED ATTACHMENTS:
1. Rationale Statement (Why is this course needed? What purposes will it serve?)
2. Impact Statement (Provide details about the Library, space, budget, and technology impacts created by adding this new course. Include supporting statements from the Library, IT Department, etc. as needed.)
3. Sample Syllabus

Department Chair Approval: Andrew Dolby  Date: 10/08/2015
CCC Chair Approval: Dawn Bowen  Date: 10/21/15

New Course Proposal Cover Sheet (July 2013)
1.) Rationale Statement: The Department of Biological Sciences has determined that using BIOL 471 as the course number for experimental courses specifically designed to fulfill the biology major’s Research Intensive (RI) requirement is inefficient and creates unnecessary work for both faculty and the Curriculum Committee (both CAS and University). Currently, to offer a section of BIOL 471 that satisfies this requirement, faculty must submit a Program Change Proposal and await committee approval. Furthermore, all RI courses are part of a vertically building sequence that begins with BIOL 260- The Research Process. BIOL 260 must therefore be consistently listed among the prerequisites for all RI courses. However, not all BIOL 471 sections are intended to fulfill the RI, and therefore, it is inappropriate to add BIOL 260 to its stated list of prerequisites. Finally, each new BIOL 471 section approved for RI credit must be added to the list of courses in the Academic Catalog that fulfill the RI requirement, even though it may not be offered on a regular basis and may be replaced with a permanent course number. Continually adding and subtracting to and from this list of RI-approved BIOL 471 sections in the Catalog will likely cause increasing confusion for both students and their advisors.

After consultation with the CAS Curriculum Committee, the department has decided that the most efficient way to offer experimental RI courses in the future is to establish a new course specifically designed for this purpose. BIOL 260 could be included as a prerequisite, BIOL 472 could permanently replace the current list of RI-approved BIOL 471 sections in the Catalog, and no further approvals would be needed for experimental RI courses as they are offered.

We will retain BIOL 471 in the Academic Catalog and continue to use it for experimental courses NOT designed to fulfill the Research Intensive requirement.

2) Impact Statement: We anticipate no need for additional teaching staff or other resources. BIOL 472 will simply serve as an alternative course number for BIOL 471 if the experimental course is designed to meet RI requirements.

3) Sample Syllabus:


Professor: Dr. Alan B. Griffith
435B Jepson Hall
654-1422
agriffit@umw.edu

What’s the Purpose of this Course?

The overarching purpose of Biology Research Intensive courses is for each of you to plan and implement an extended research project. You will prepare proposals, manage the logistics of experiments or observational studies, collect and analyze data, and communicate your work to your peers. As a result, this research-intensive curriculum will expose each of you to the full range of challenges, both academic and practical, posed by doing science.
The purpose and structure of our Biology Research Intensive courses fulfill, at least, two important needs in biology education today. First, you will be better equipped to function in the science career of your choice. Second, you will necessarily be engaged in a complex process, in which you are more likely to learn the processes and concepts of biology. Complex processes, by their nature, will require you to solve simple and complex problems, a saleable job skill.

**Student Learning Outcomes Common to All RI Courses**

Upon completion of an RI course, you will be able to:

- Describe and understand the differences between descriptive and hypothesis-based scientific studies.
- Design, plan, and propose a biological research project.
- Execute the biological research project that you have proposed.
- Analyze and display biological data resulting from your project.
- Draw scientifically sound and appropriate conclusions from your data.
- Effectively communicate findings from your research project.

In order to reach these outcomes you will:

- conduct a research project in groups of 2-4 students.
- conduct either a descriptive or hypothesis-driven project.
- not necessarily conduct original work, but you will organize your ideas to justify and articulate a convincing scientific rationale.
- report your scientific rationale in a research proposal following the conventions of contemporary scientific practice.
- organize, manage, and perform your proposed research.
- display and analyze data in a manner suitable for the research question, sub-discipline of biology, and type of data.
- articulate appropriate scientific conclusions.
- report your work in a written report, scientific poster, or oral report.

**Attendance Responsibility**

Lecture attendance. This class may be the closest experience you get in prepare for work in a commercial / research lab, graduate research or other science careers. Life will require your full attention and participation. So will this class. In addition, this is a small class. I will come and find you.

Lab attendance: Required. If you have more than 2 unexcused absences from this lab you will receive a failing grade for the course. You will need this time to work through the details of your project. Your research partners will also depend on your mind and your work. **Make-up policy.** Basically, there is no “make-up” policy. All assignments are due as specified. Any legitimate absences or excuses must be documented and cleared by me. If you have an excusable absence, you must present an excuse to me on the first day that you return to campus. If you know you will have an excused absence in advance (e.g. a college sanctioned athletic event), let me know in advance. For such absences, you will be responsible to hand in assignments on time.
Office hours
1) Mon. 9 am – 10 am
2) Tues. 1 pm – 2 pm
3) Tues. 2 pm – 3 pm
4) Wed. 2 pm – 3 pm
5) Fri. 9 am – 10 am
6) By appointment, just ask. See me after class.

Evaluations / Grades
Your grade in Research Practices will be based on the work you do on and for your research project. Calculation of your grade is simple, as a point is a point regardless of where you earn that point. So, simply add up the points you have earned and divide by the total points possible. You should keep track of your own grades in this and all other courses. I will enter grades in Canvas “Grades” as a record of what you have earned. If you see data entry errors, please let me know right away.

Grading scale. The +/- grading scale will be used to determine your final grade as shown below.

A 93-100% C 73-76%
A- 90-92% C- 70-72%
B+ 87-89% D+ 67-69%
B 83-86% D 60-66%
B- 80-82% F < 60%
C+ 77-79%

Midterm grades will be based on all evaluations available at that time. An unsatisfactory (U) will be given to you if you have <70% of the possible points at that time.

These are the “deliverables” for which you will be graded:

<table>
<thead>
<tr>
<th>Assignment name</th>
<th>Individual or Group</th>
<th>Points</th>
</tr>
</thead>
</table>
| 2-minute research pitch                  | individual          | 10 pts.
| Paper review / analysis                  | individual          | 25 pts.
| Hypotheses and predictions draft         | individual          | 25 pts.
| Research proposal                        | individual          | 50 pts.
| Materials, equipment and methods needs   | group               | 10 pts.
| Introduction draft                       | individual          | 25 pts.
| Annotated bibliography                   | individual          | 25 pts.
| Plant ID quiz                            | Individual          | 25 pts.
| Project Report Final                     | Individual          | 125 pts. |