APC Document 33: Addition of Research Methods Courses to Biology Curriculum; Change Title and Description of BIOL 351

Effective Date: Fall 2005

1. Add: On pg. 72, title and course description for BIOL 298:

   298  Introduction to Research Methods (1-3)
   Directed laboratory research, field research or independent study that introduces students to specialized research techniques and methodology necessary in the early stages of professional development. Nature of the course is determined by mutual agreement between student and faculty mentor. The course is appropriate for students in their first two years of study and may be repeated for a total of 3 hours of credit. Will not count towards biology elective requirements. Prerequisite: permission of instructor.

Add: On pg. 74, title and course description for BIOL 398

   398  Research Methods in Biology (1-3)
   Directed laboratory research, field research or independent study that introduces upper level biology students to specialized techniques and methodologies needed for undergraduate research or professional development. Nature of the course is determined by mutual agreement between student and faculty mentor. Will not count towards biology elective requirements. May be repeated for a total of 3 hours of credit. Prerequisites: BIOL 115, 116, 210, 211, and permission of instructor.

Impact:
This change may result in a slight increase in hours in the major for those students electing to pursue senior research. Historically, most students majoring in biology take BIOL 480 (Senior Seminar) rather than BIOL 498 (Undergraduate Research in Biology); these students will not be affected by this change. As an elective, no additional hours are obligated for biology majors by this change. Faculty research advisors will have an increased teaching load depending on the number of students permitted to enroll in their course.

Rationale:
It is expected that these courses will involve more biology majors in undergraduate research. Because students can receive credit for independent research early in their undergraduate careers, more students will be exposed to research and have close interaction with individual research mentors. Thus, all biology majors will be given an option early in their undergraduate career to undertake the initial steps of a research project. This change will enhance the quality of undergraduate research by giving credit, instruction, and feedback to students in the early phases of their undergraduate research projects. Students may continue along this track by enrolling in BIOL 498 during their senior year or they may opt instead to enroll in BIOL 480, if they are not interested in continuing their research. As a result of their interactions with faculty, it is anticipated that students completing this course will have better conceived, more successful research projects that will make them more competitive in applying to graduate schools or funding agencies, while providing other ancillary benefits as they complete their research. This change will also better document the effort and progress of students as they pursue research because most undergraduate research students begin their projects well in advance of the semester when they actually enroll in BIOL 498.
2. **Delete:** On pg. 74, title and course description for BIOL 351  
   **Add:** On pg. 74, new title and course description for BIOL 351

   **351 Field Botany (4)**
   Field identification of flowering plants of the Southern Appalachians, coupled with a survey of the principles of plant taxonomy and evolution, nomenclature, plant community ecology of the Southern Appalachians, speciation, and species concepts. Laboratory will include weekly field trips to local natural areas. Prerequisite: BIOL 211. Fall.

**Impact:**
The proposed change adds a lecture component to a course that previously consisted of only one lab per week. One credit hour will be added to the course, allowing it to conform to a 4 credit hour lecture/lab format, which is a norm for Biology and most science courses. The additional faculty load is justified by the more thorough exposure students will be given to topics presented in this course.

**Rationale:**
The modified format has been successfully presented as a special topics course (BIOL 374, Plants of the Southern Appalachians) and permission is requested to make this change permanent. Adding a lecture component to the course allows for presentation of facts and concepts in lecture which better prepare students for learning during weekly field trips. Without lectures, it is difficult to develop students’ skills in the field to a level of sophistication that should be expected from a 300-level course for majors.