Course Proposal: New Course

1. Course prefix and number: **Bio 451**

2. Effective Year/Term: **FALL 2012**

3. CIP CODE/10 digit program code: **26030100**

4. Short Course Title: **Natural History of the Algae**

5. Enter course description exactly as it will appear in the general/graduate bulletin.

**Comparative biology of the algae, including both Prokaryotic and Eukaryotic organisms, with an emphasis on evolution, classification, and identification.**

6. Prerequisites:

**Bio 130, 131, and 133**

7. College: **College of Science and Mathematics**

8. Department Teaching Course: **Biology**

9. Credit Hours:

Maximum: **3** Minimum: **0** Maximum Hours counted toward degree: **3**

10. Maximum contact hours each week fall semester Lecture: **2** Lab: Other:

11. May this course be taken more than one time each semester: **No**

12. Grade Type: **Regular: A-F**

13. Instruction Type: **Lecture**

14. Will this course require additional library resources: **No**

15. Does this course replace a course on the current/previously listed inventory: **No**

16. If Yes list the prefix and number: If not applicable enter N/A:

17. What is the primary reason you are proposing this course?

**This course will provide an option for students interested in Botany and   
Aquatic Biology. It dovetails well with courses in plant diversity, limnology, ichthyology, and other aqautic biology offerings.**

18. Describe the place of the proposed course within your current curriculum. Will it be

elective or required? Part of a major or a minor?

**This course would be applicable to Botany track students under the Plant Diversity option, or to Ecology and Evolutionary Biology students under the Advanced Botany option. It would fill an advanced Biology elective slot for both majors and minors.**

19. How does the proposed course differ from similar courses being offered at Stephen F. Austin?

**This course does not duplicate any existing course at SFA.**

20. Syllabus: Course Learning Goals

List course objectives; describe what students who complete the course will know or be able to do.

**See attached syllabus**

21. Syllabus: Course Outline

List the topics that the proposed course will cover and indicate the approximate proposed amount of time to be devoted to each, either by percent of course time or number of weeks. Please indicate which topics will be required in all sections of the course and which may vary.

**See attached syllabus**

22. Syllabus: Proposed Textbook/Assigned Reading Materials for course

**Algae 2nd ed. Graham, Wilcox, and Graham Publisher Benjamin Cummings**

Dept. Chair \_**Dennis A Gravatt** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_**28 October 2011**\_

College Curriculum Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

College Dean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grad Dean/Univ Curr Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Syllabus**

**Course Description**

Comparative biology of the algae, including both Prokaryotic and Eukaryotic organisms, with an emphasis on evolution, classification, and identification.

**Prerequisites:**

Bio 131 and 133

**Textbook:**

Algae 2nd ed. Graham, Wilcox, and Graham

**Program Learning Outcomes**

The course learning outcomes corresponds to the Biology Department PLO 1 to develop knowledge of biological concepts and to PLO 4 to answer biological questions using scientific methods and instrumentation as well as safe and appropriate use of laboratory equipment.

**Course Learning Objectives**

* To introduce students to the diversity of organisms traditionally classified as algae (PLO 1)
* To present students to the natural history of the algae including their evolution, diversity, and classification (PLO 1)
* To introduce students to the life cycles and reproductive variation of the algae (PLO 1)
* To learn to properly utilize the microscope (PLO 4)

**Student Learning Outcomes (Lecture)**

1) Students will understand patterns of algal variation and how these patterns relate to evolution and classification of algae (PLO 1)

2) Students will master the concepts of algal life cycles and reproduction (PLO 1)

**Course Outline**

Unit 1- Introduction and Cyanobacteria (25%)

* Introduction to the algae
* Photosynthesis and Chemosynthesis
* Prokaryotes- Eubacteria and Archaea
* Cyanophyta
* Eukaryotes and endosymbiosis
* Eukaryotic life cycles

Unit 2- Algae of uncertain affinities (25%)

* Cryptophyta
* Euglenophyta
* Dinophyta
* Haptophyta

Unit 3- The Heterokonts (25%)

* Oomycota
* Bacillariophyta
* Chrysophyta
* Phaeophyta

Unit 4- The Red and Green Algae (25%)

* Rhodophyta
  + Bangiophycidae
  + Phloridiophycidae
* Chlorophyta
  + Chlorophyceae
  + Ulvophyceae
  + Charophyceae
* The great leap- Life on land