

**FORM B**  
**REQUEST FOR ADDITION OF A NEW COURSE**

**I. Course Identification**

- a. Proposed prefix and number: BIO 434W
- b. Proposed title: Electron Microscopy
- c. Proposed catalogue description: This course is designed to teach students the methods of preparing specimens for electron microscope analysis and to use the electron microscope as a tool to conduct research. Students will become competent in using the electron microscope for visual analysis or chemical elemental analysis.
- d. Credit hours: 3
- e. May course be repeated for credit? No
- f. Maximum number of credit hours that can be earned: 3
- g. Is the proposed course writing enhanced? (applies only to undergraduate courses) Yes
- h. Prerequisites:
  - i. Course prerequisite: 12 hours advanced Biology or approval of the instructor
  - ii. Classification prerequisite: No
  - iii. Semester hour prerequisite: No
  - iv. Companion course: None
- i. Identify the majors and/or minors this course will be required for: BA/BS Biology
- j. Identify the majors and/or minors this course will be an elective for: Biology

**II. Statement of Need and Program Compatibility**

- a. Explain in detail why this course is needed (including how the proposed course will support the present program curriculum).

The Department of Biological Sciences had a course in electron microscopy (BIO 461W) until 1998, when the electron microscope was eliminated and not replaced. Thus, the course was dropped from the curriculum because the equipment was not available to teach the class. This year we acquired a new scanning electron microscope as support for the Masters degree programs in Biology and Forensic Science; however, a graduate course cannot be taken by qualified undergraduates, and graduates already regularly take two other 400-level Biology courses that they apply toward their degree programs.

Our undergraduate students will benefit from this class by having access to this important tool, as well as developing competencies that will make them more marketable in careers in Biology or Forensics. However, this equipment requires formal training to use. Additionally, students will learn skills in conducting an independent research project from its inception to the completion of a scientific paper, which will hopefully lead to peer-reviewed publications and presentations at professional conferences.

This course covers an important method of research that is taught nowhere else in our curriculum. Methods learned in this course can be incorporated into many types of biological and forensic research.

- b. Explain how the addition of this course will directly or indirectly influence subsequent changes in the curriculum.  
No change
- c. Are courses with similar titles of similar contents currently offered in other departments? If yes, explain how this course is different. Identify representatives from departments offering courses with similar titles or contents that have been made aware of, and have discussed this proposed course.  
No
- d. Identify who is likely to be the instructor of this course and the impact of this new course on the departmental teaching assignments.  
Drs. Jerry L. Cook and/or Justin Williams

**III. Course Content**

- a. List the course objectives:  
This course will directly support the Biology program, and could be applicable to students in Geology and Chemistry. It will provide students with an ability to analyze specimens using the electron microscope. Techniques taught will include specimen preparation techniques, visual analysis of specimens, and elemental analysis using x-ray capabilities of the

electron microscope. It will also introduce students to methods of research for a wide variety of scientific topics, and allow these students to use this technology in their research.

b. Identify the proposed text(s) for the course (include author, title, date):

Author	Title And Publisher	Year
Postek, M. T., Howard, K. S., Johnson,	Scanning Electron Microscopy: A Students Handbook. Ladd Research Industries.	2001

c. Using a 15 week class schedule, identify the topics to be covered during each week of the semester:

Week 1	Introduction to the electron microscope
Week 2	Methods of specimen preparation for the electron microscope, including critical point drying, chemical preparation of specimens, and sputter-coating
Week 3	Preparation of varying specimen types
Week 4	Instruction in use of the electron microscope
Week 5	Attaining competency to use the electron microscope as a research tool
Week 6	Attaining competency to use the electron microscope as a research tool
Week 7	Special techniques in electron microscopy
Week 8	Special techniques in electron microscopy
Week 9	Electron microscope individual research project
Week 10	Electron microscope individual research project
Week 11	Electron microscope individual research project
Week 12	Electron microscope individual research project
Week 13	Analysis of project results
Week 14	Presentation of research projects

Week 15	Presentation of research projects
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**IV. Information on the Availability of and Need for Equipment and Library Resources required for the Course.**

- a. In order for the Library to better meet the needs of students who will enroll in this course, please indicate the types of resources you expect the students to use. This section is to help the Library review the adequacy of the collection and plan for future allocation of resources to support this course.

**Check all that apply:**

<i>Types of print/electronic library resources needed</i>	
Scholarly, Peer-Reviewed Journals	Yes
Popular Magazines	
Newspapers	
Trade Journals	Yes
Books	Yes
Electronic Databases	Yes
Audio Visual	
(other)	

- b. Please identify **specific** resources for this class that are not available in the Library. These resources could include but are not limited to journals (both print and electronic), encyclopedias, dictionaries, books, and electronic databases.
- c. Identify the need for and the availability of equipment and technological resources.  
All necessary equipment is available within the Department of Biological Sciences.

**After this form has been completed, contact a Bibliographer/Librarian to complete the Library Collection Review (LCR) form. The LCR form should be attached to Form B before the proposal is forwarded to your College Curriculum Committee.**

**LIBRARY COLLECTION REVIEW for PROPOSED COURSE**

Proposed Course Prefix and Number: BIO 434W

Proposed Title: Electron microscopy

1. Results of the librarian's review of the adequacy of library holdings to support the proposed course content areas and assignments. Please be specific, and indicate whether the subject areas of the course require new expenditures, or are already included in the collection due to library support of courses with similar information needs.
2. Identify additional resources that are likely to be needed, and the approximate cost of the materials.
3. Bibliographer's comments (state any concerns regarding the library's support of the course).

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Bibliographer

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Library Director