SACRAMENTO STATE

Course Change Proposal
Form A

Academic Group (*College*): **NSM**	**Academic Organization** (*Department*): Biological Sciences	**Date: October 12, 2006**
Type of Course Proposal: New _X__ Change ___ Deletion ___	**Department Chair:** Nicholas Ewing	**Submitted by:**
Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes ___ No __X_	**For Catalog Copy: Yes __X_ No ___** **CCE: Yes ___ No __X_**	**Semester Effective:** **Fall ___ Spring _X__, 20_08__**

This course replaces experimental course Subject Area (*prefix*) **and Catalog Number** (*course number*):	
This Catalog Number (*course number*) **is being replaced:**	

Change from:

Subject Area (*prefix*) **& Catalog No.** (*course no.*):	**Title:**	**Units:**

Change to:

Subject Area (*prefix*) **& Catalog No.** (*course no.*): **BIO 221A**	**Title:** Cell & Molecular Methods and Techniques	**Units: 2**

JUSTIFICATION:

The graduate methods course (BIO 220) currently addresses two major skill sets 1) oral and written presentation skills focused primarily on the advancement to candidacy and 2) hands-on scientific methodology. The amount of time devoted to discussions of methodology and hands-on learning of current biological techniques (class split up into cell/molecular and ecology/evolution groups) is 4 weeks out of the total 15 week course. This does not allow enough time to prepare our students for independent study nor appreciate the diversity of techniques and approaches in the current field. BIO 221A Cell & Molecular Methods and Techniques would expose students to the current research methods/techniques in cell and molecular biology and develop their analytical thinking skills. The goals would be to teach the core techniques, to address the scientific process (hypothesis-driven research) and analysis of results. The course would prepare students for graduate research and future career opportunities, and reduces the burden on graduate advisors to teach basic research techniques in their laboratories.

NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/acaf/univmanual/crspsl.htm - Guidelines for Catalog Course Description

BIO 221A is a graduate level introduction to research methods in molecular and cellular biology. Students learn both cell and molecular techniques in the context of hypothesis-driven research to answer questions relating to a specific gene and cellular system. Experimental design and commonly used laboratory techniques will be explored.
Two 3-hour Laboratory periods per week. Fee course. 2 units.

Note:	
Prerequisite: BIO 220 (may be taken concurrently)	
Corequisite:	
CAN (California Articulation Number):	
Graded: Letter __X___ Credit/No Credit____	**Instructor Approval Required? Yes___ No_X_**
Course Classification (*e.g., lecture, lab, seminar, discussion*): **Laboratory C16**	**Title for SIS+/CMS (not more than 30 characters)** **Cell and Molec Methods**
Cross Listed? Yes ___ No__X__	**If yes, do they meet together and fulfill the same requirement, and what is the other course.**
How Many Times Can This Course be Taken for Credit? __once____	
Can the course be taken for Credit more than once during the same term? Yes ___ No X_	

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at http://www.csus.edu/acaf/example.htm

Students will learn Cellular & Molecular Methods and Research design
Students will learn Cell Culture: Sterile Technique, Cell Passing, and Counting, Culture Immunocytochemistry
Students will learn Protein Prep, SDS-PAGE/Western Blots, RNA Prep, RT-PCR and Agarose gel electrophoresis
Students will learn to Search Sequence Databases using BLAST and Design Oligonucleotide Primers
Students will learn *In situ* Hybridization of cultured cells
Students will learn Ligation of PCR product into a cloning vector, *E. coli* Transformation and Colony Selection
Students will learn Plasmid Preps and Restriction Mapping
Students will learn Analyzing Sequence Information

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

Grading will be based on the result of two written exams, two laboratory write-up, an oral presentation and a laboratory notebook.

For whom is this course being developed?
Majors in the Dept _X__ Majors of other Depts ___ Minors in the Dept ___ General Education ___ Other ___
Is this course required in a degree program (major, minor, graduate degree, certificate? Yes _X_ No ___
If yes, identify program(s): Master of Science in Biological Sciences, Concentration in Cell and Molecular Biology

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes X No ____
If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). _____

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:	Date
Department Chair:	3/26/07
College Dean or Associate Dean: Laurel Heffernan	4/17/07
CPSP *(for school personnel courses ONLY)*	
Associate Vice President and Dean for Academic Programs	

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.