Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  __X__ NEW           ____ MODIFY           ____ DELETE

Local Unit: SCS

Course Designation: BINF

Graduate Council Approval Date:

Course Number: 820

Full Course Title: Advanced Topics in Molecular Cell Biology

Abbreviated Course Title (24 characters max.): Molecular Cell Biology

Credit hours: 3

Program of Record: Bioinformatics Ph.D.

Repeatable for Credit?  
____ D=Yes, not within same term  Up to hours
____ T=Yes, within the same term  Up to  hours
__ X__ N=Cannot be repeated for credit

Activity Code:  __X__ Lecture (LEC)  ____ Lab (LAB)  ____ Recitation (RCT)
____ Studio (STU)  ____ Internship (INT)  ____ Independent Study (IND)  ____ Seminar (SEM)

Catalog Credit Format:  3:3:0

Course Level:  GF(500-600)  ____ GA(700+)  __X__

Maximum Enrollment: 20

For NEW courses, first term to be offered: Spring 2006

Prerequisites: BINF 631 or equivalent

Catalog Description (35 words or less): Advanced molecular and cellular biology foundation for BINF students. Topics may include biomembranes and cell architecture, cell signaling, receptor activation, gene control, protein targeting and trafficking, cell cycle regulation.

For MODIFIED or DELETED courses as appropriate:

Last term offered:  Previous Course Abbreviation:  Previous number:

APPROVAL SIGNATURES:

Submitted by:  ________________________________ email: ________________

Department/Program:  ________________________________ Date: ________________

College Committee:  ________________________________ Date: ________________

Graduate Council Representative:  ________________________________ Date: ________________
Approval from other units:

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Graduate Council approval: _______________________________ Date: __________

Graduate Council representative: __________________________ Date: __________

Provost Office representative: ____________________________ Date: __________
1. COURSE NUMBER AND TITLE:

BINF 820 - Advanced Topics in Molecular Cell Biology

**Prerequisites:** BINF 631 or permission of instructor.

**Catalog Description:** Advanced molecular and cellular biology foundation for bioinformatics and computational biology. Topics may include biomembranes and cell architecture, cell signaling, receptor activation, gene control, protein targeting and trafficking, cell cycle regulation.

2. COURSE JUSTIFICATION:

Course objectives: This course will provide the student with a guide to current research topics related to molecular cell biology, including biomembranes and cell architecture, cell signaling, receptor activation, gene control, protein targeting and trafficking, cell cycle regulation. Student presentations of research topics will provide opportunity to polish analytical and verbal presentation skills.

**Course Necessity:** There is no similar course in GMU addressing the current research issues in molecular cell biology from a computational perspective. This course prepares students to perform research in an important area of bioinformatics and computational biology

**Course Relationship to Exiting Programs:** This course has been previously offered (Spring 04, 05) as BINF 739 Special Topics. It will be an elective course for students in the Ph.D. and MS programs in Bioinformatics.

**Course Relationship to Existing Courses:** There is no similar course at GMU.

3. APPROVAL HISTORY: NA

4. SCHEDULING AND PROPOSED INSTRUCTORS:

**Semester of Initial Offering:** Spring 2006

**Proposed instructors:** Dr. D. Seto

5. TENTATIVE SYLLABUS: See attached.
BINF 820: Advanced Topics in Molecular Cell Biology

Goal: Provide an advanced molecular and cellular biology foundation to BINF students, following an intro course. Provide an opportunity to polish research analytical and verbal presentation skills.

Grading: Three exams (x100pts= 300pts); One 10 minute presentation (x70pts= 70pts); Three optional homework sets (x10pts= 30pts).

85%total= A; 70%= B; 60%= C; 50%= D.

Schedule of lectures and exams:

Week 1: Mechanics of course; Fast review of ‘Semester 1’- Life, chemistry, chemistry, proteins, nucleic acids, lipids, Genes, Transcription, Translation.


Week 3: Chapt. 5.

Week 4: Chapt. 13. Signaling at the cell surface. Pp 533-570.

Week 5: Chapt. 13.

Week 6: EXAM #1.


Week 8: Chapt. 14.

Week 9: Chapt. 15. Integration of signals and gene controls. Pp 611-656.

Week 10: Chapt. 15.

Week 11: EXAM #2.


Week 13: Chapt. 16.


Week 15: EXAM #3.