SOUTHEAST MISSOURI STATE UNIVERSITY

Department(s): Physics and Engineering Physics **Course No. EP495/695 (1)**

Revision:___ New: 9/2012___

Title of Course: Readings in Nano-Bio Engineering

I. Description and Credit Hours of Course:

A. Course Description for Undergraduate Bulletin:

Understanding of Nano-Bio Engineering research. May be repeated once for credit. (1)

B. More Extensive Course Description:

A student who desires to enroll in EP 495/695* Reading in Nano-Bio Engineering should meet with an appropriate faculty member who will serve as the project supervisor. The nature of the project will then be established to the mutual satisfaction of the student and faculty member. This meeting should take place prior to the semester in which the student enrolls for credit.

The attached Approval Request Form should then be filled out by the student with the help of the project supervisor. The project supervisor will need to verify that the student has the necessary prerequisites. This information can normally be obtained from the student's advisor or from the department chairperson. The student and faculty advisor will then sign the approval form and submit it to the department chairperson for their signature. Copies of the approval form will be made and given to the student, project supervisor, and chairperson.

Upon successful completion of the project, the faculty supervisor will sign the attached Course Completion Form, which will be turned in to the department chairperson to be filed for permanent record. The faculty advisor may choose to have the student give an oral presentation of his/her project at a student/faculty seminar, Physics and Engineering Club meeting, or other suitable forum prior to establishing a grade in Reading in Nano-Bio Engineering (for EP 495). For EP 695, a final technical report must be submitted. The technical report needs to be prepared according to ACS/AIP/IOP/Elsevier manuscript style.

*Only graduate students can be enrolled in 695 course numbers upon approval by their degree planning committee. The decision by the degree planning committee will determine the eligibility of the student to enroll in EP 695.

II. Prerequisite: PH120/PH 230, and either CH185, or BI151 ***and*** permission of the instructor. For graduate students, approval from the degree planning committee required.

III. Purposes or Objectives of the Course:

A. To understand the basic principles of designing nanoscale materials and to become familiar with their potential applications in various fields of biomedical engineering.

B. To understand novel measurement approaches for evaluating the basic properties of the smart nanostructures.

C. To understand the interaction between novel nanostructures and mammalian cells.

D. To learn to prepare scientific research/technical reports, and communicate research results in national / international conferences or in scientific journals.

IV. Student Learning Outcomes (Minimum of 3):

A. Students will demonstrate an understanding the basic principles of designing nanoscale materials and become familiar with their potential applications in various fields of biomedical engineering.

B. Students will demonstrate an understanding of novel measurement approaches for evaluating the basic properties of the smart nanostructures.

C. Students will demonstrate an understanding of the interaction between novel nanostructures and mammalian cells.

D. Students will demonstrate an the ability to prepare scientific research/technical reports, and communicate research results in national / international conferences or in scientific journals.

V. Expectations of Students:

A. Students are expected to attend all project related activities and complete all assignments on time.

B. Students are expected to maintain a notebook detailing all analyses and results from those analyses.

C. Students are expected to perform satisfactorily on all project assignments, individual projects, and other activities.

D. Graduate Students will have extended duties which will include additional literature review, and greater depth of analysis.

VI. Course Content or Outline (indicate number of class hours per unit or section):

A. Identification of a specific area of research – 2 weeks
B. Identification of prior research reports and related works – 2 weeks
C. Investigation of previously performed experiments and design – 6 weeks
D. Investigation of experimentally obtained data, and analysis of results– 6 weeks
E. Report preparation – 16 weeks (simultaneously with tasks A-D).

VII. Textbook(s) and/or Other Required Materials or Equipment:

In addition to standard word processing software, students must have routine access to high-speed internet, Microsoft Excel or equivalent spreadsheet software, and NIH Image J (available free of cost) software. Manuals and handouts containing detail description of the experimental procedure will be supplied to each student. No textbook required.

VIII. Basis for Student Evaluation:

Undergraduates		Graduate Students	
Project Performance	40 %	Project Performance	40 %
Laboratory Notebook	40 %	Laboratory Notebook	40 %
Report and Final Presentation	20 %	Report and Final presentation	20 %

Grading Scale

Undergraduates	Graduate Students
90% - 100% = A	90% - 100% = A
80% - 89% = B	80% - 89% = B
70% - 79% = C	70% - 79% = C
60% - 69% = D	

The weight of the evaluation criteria may vary according to each instructor and will be communicated at the beginning of the course.

Graduate students scoring below 70% will earn a failing grade.

Academic Policy Statement:

Students will be expected to abide by the University Policy for Academic Honesty regarding plagiarism and academic honesty. Refer to: http://www6.semo.edu/judaffairs/code.html

Student with Disabilities Statement:

If a student has a special need addressed by the Americans with Disabilities Act (ADA) and requires materials in an alternative format, please notify the instructor at the beginning of the course. Reasonable efforts will be made to accommodate special needs.

APPROVAL REQUEST FORM

Southeast Missouri State University
Department of Physics and Engineering Physics

READINGS IN NANO-BIO ENGINEERING

Student: _____ Semester: _____ Year _____

Instructor: _____ Credit: EP 495/695 (1 hr)___

Verification of Prerequisites:

1. Prior credit hours in Readings in Nano-Bio Engineering _____
   (A student may repeat these courses once for credit.)

2. Semester hours completed _____
   (A student must have completed a minimum of 60 semester hours prior to scheduling Readings in Nano-Bio Engineering)

3. Prerequisites _____
   (PH120/PH 230, and either CH185, or BI151 and permission of the instructor. For graduate students, approval from the degree planning committee required.)

4. Grade point average _____
   (A student must have a minimum cumulative 3.0 grade point)

5. No credit hours will be counted towards PH/EP undergraduate Minor.

Description of Project (Please attach additional pages if necessary):

Approval:

_____ _____
Signature of Student and Date Signature of Instructor and Date

_____
Signature of Chairperson and Date

COURSE COMPLETION FORM

Southeast Missouri State University
Department of Physics and Engineering Physics

READINGS IN NANO-BIO ENGINEERING

Name of Student: _____

Name of Faculty Advisor: _____

Signature of Faculty Advisor: _____

Credit Hours: _____

Date Initiated: _____ Date Completed: _____

Grade Received: _____

Title of Project: (Include comments, if applicable)