

**FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED  
NEW COURSE or MODIFICATION OF AN EXISTING COURSE**

Department/School Chemistry Date March 12, 2007

Course No. or level: 297 Title: Introduction to Research in Chemistry

Semester hours: 1,2, or 3 Clock hours: Lecture: varied Laboratory: varied

Prerequisites: CHEM 102 and permission of Department

Enrollment expectation: varied (1-5 per year)

Indicate any course for which this course is a (an)

modification \_\_\_\_\_  
(proposed change in course title, course description, course content or method of instruction)

substitute \_\_\_\_\_  
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate \_\_\_\_\_  
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description: Allen Clabo

Department Chairperson's/Dean's Signature: \_\_\_\_\_

Provost's Signature: \_\_\_\_\_

Date of Implementation: Fall 2007

Date of School/Department approval: March 12, 2007

Catalog description:

**297 Introduction to Research in Chemistry** (1), (2), or (3). (Prerequisites: CHEM 102 and permission of Department) F, S, SU. Students are introduced to a variety of techniques of chemical research, including synthesis, spectroscopy, chemical literature searching, and molecular modeling. The focus of the course is on using the tools of chemical research in practical applications to problems rather than on theoretical aspects of the methods. Faculty involved in undergraduate research introduce their research interests and methods and the contributions undergraduates students could make. Students complete both a written report and an oral presentation on a research

topic or method of interest. May be taken for credit in the Honors Program by prior approval.

Purpose: 1. For Whom (generally?)

The course is for undergraduates who have either expressed an interest in research with a faculty member or who have been identified as having potential to benefit from and contribute to research, especially second-year students who may have completed less than two years of undergraduate coursework Chemistry.

2. What should the course do for the student?

The course introduces students to the methods and techniques used in chemical research, including chemical literature searching, choice of experimental technique, experimental design, analysis of data, and presentation of results.

Teaching method planned:

The student will learn about and become involved in all aspects of searching for, designing, performing, and analyzing a research topic, chosen by consultation with the Chemistry department faculty. Teaching will be by individual discussions, classroom lectures, library assignments, laboratory and computer exercises, and oral and written student presentations.

Textbook and/or materials planned (including electronic/multimedia):

No textbook will be used. Journal articles and other reading will vary by project and faculty member.

Course Content: ( Please explain the content of the course in enough detail so that the Academic Affairs Committee can make an informed judgement. Include a syllabus for the course.)

This course will serve as a means to introduce students to the ideas of creating and evaluating research projects; searching for relevant background literature; designing appropriate reactions, spectroscopic analyses, or computational models; analyzing research data; and preparing and presenting research results. The ideal end result will be for students to enroll in CHEM 497 (Special Studies) and to contribute independent research to the ongoing research projects of a faculty member. A new course is needed to introduce students to the concepts and techniques of research before they have had all the coursework necessary to participate in independent research. CHEM 497 is open

only to juniors and seniors. The new course will allow other students to be introduced to research techniques and topics earlier.

**When completed, forward to the Office of the Provost.**

9/03

Chemistry 297 – Introduction to Research in Chemistry  
Fall Semester 2007

- **Prerequisites:** CHEM 102 and permission of the Department.
- **Class times:** TBD by each participating faculty member
- **Office Hours:** TBD by each participating faculty member
- **Required Texts and Materials:** None. Journal articles and other reading materials will be assigned by the participating faculty.
- **Attendance** at all scheduled class meetings is the responsibility of the student. Attendance and active participation in class discussions will constitute an important part of the course grade.
- **Grading:**
  - Literature and other out-of-class assignments = 60%
  - Attendance and participation = 20%
  - Final Written and Oral Report = 20%
- **Grading Policy:**
  - 90 – 100% = A
  - 80 – 89% = B
  - 70 – 79% = C
  - 60 – 69% = D
  - 59% or less = F
- **Written and Oral Report:** The written report describing the research project in which the student participates will be prepared to resemble the style of a journal article, including Abstract, Background, Procedures, Data, Conclusions, Future Work, and References. The same results of participation in research will be presented as a 10-minute oral presentation using PowerPoint, in the style of a professional meeting. Other faculty and students will be invited to attend the presentations.
- **Course objectives**
  - To use the chemical literature to locate and summarize background information for a research problem
  - To understand the process of designing an experiment to answer a chemical research question
  - To participate actively in a research project with a faculty mentor and to learn the potential contributions of an undergraduate student to ongoing research
  - To present background information, research goals, experimental procedures, and research data in an acceptable oral and written form

**FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE**

Department/School Chemistry Date 3-15-07

Course No. or level 498 Title Chemistry Internship

Semester hours 1 or 2 Clock hours:45 or 90 Lecture \_\_\_\_\_ Laboratory X

Prerequisites Chemistry 101-102 and Chemistry 201-202

Enrollment expectation 2-4 a given semester

Indicate any course for which this course is a (an)

modification \_\_\_\_\_

(proposed change in course title, course description, course content or method of instruction)

substitute \_\_\_\_\_

(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate \_\_\_\_\_

(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Dr. Fred R. Clayton, Jr.

Department Chairperson's/Dean's Signature \_\_\_\_\_

Provost's Signature \_\_\_\_\_

Date of Implementation \_\_\_\_\_

Date of School/Department approval 2-21-07

Catalog description:

- Purpose:
1. For Whom (generally?) Chemistry majors
  2. What should the course do for the student? Provided experience in applying chemical principles in the workplace of an industrial, governmental or educational laboratory

Teaching method planned: Supervised laboratory project

Textbook and/or materials planned (including electronic/multimedia): Appropriate laboratory manuals, chemical literature, laboratory equipment and instruments

Course Content: ( Please explain the content of the course in enough detail so that the Academic Affairs Committee can make an informed judgement.

Include a syllabus for the course.)

See attached description of course content in formulated **Guidelines and Approval Form.**

**When completed, forward to the Office of the Provost.**

9/03

**CHEM 498**  
**Chemistry Internship**

**Guidelines:**

A chemistry student enrolled in the course will be required to perform a minimum of 45 hours of service for one (1) semester-hour of credit and a minimum of 90 hours of service for two (2) semester-hours of credit. The internship will be conducted in an environment where the student will be observing and applying chemical principles in the workplace.

The student intern will be required to keep a journal to document daily activities and complete a final report describing the benefits of the work experience and the skills acquired. A statement from the supervisor in the workplace is also required to verify satisfactory completion of the internship. The journal, final report and supervisor statement must be delivered to the student's faculty advisor by the first day of final exams of the given semester in order for credit to be assigned.

There are no specific skills designated as these will change depending upon the particular workplace and type of work undertaken.

A maximum of three (3) semester-hours of credit can be earned toward graduation in this elective internship course.

**FRANCIS MARION UNIVERSITY**  
**APPROVAL FORM FOR CHEMISTRY INTERNSHIP (CHEM 498)**

Faculty supervisor \_\_\_\_\_ Date submitted \_\_\_\_\_

Student \_\_\_\_\_ Student I.D. \_\_\_\_\_

Workplace supervisor \_\_\_\_\_ Semester \_\_\_\_\_

Description of duties \_\_\_\_\_  
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Semester hour credit (maximum of 3 toward graduation) \_\_\_\_\_

Student's signature \_\_\_\_\_ date \_\_\_\_\_  
\_\_\_\_\_

Faculty supervisor signature \_\_\_\_\_ date \_\_\_\_\_

Workplace supervisor signature \_\_\_\_\_ date \_\_\_\_\_

Approved by: Chairperson \_\_\_\_\_ date \_\_\_\_\_  
Dean \_\_\_\_\_ date \_\_\_\_\_