This course proposal form should be completed when introducing a new course or a revision of an existing course. The proposal will be reviewed by the Committee on Curriculum, or, in the case of minor revisions, will be approved administratively by the Associate Provost for Instruction.

This Course Proposal must be completed according to the guidelines provided in Course Proposal Form – Instructions and Guidance. Please see the last page of Course Proposal Form – Instructions and Guidance, for instructions on how this Course Proposal should be submitted to the Committee on Curriculum for review.

Date: Feb 3, 2021

1. Course Information:

1.1 Course Prefix and Number: FCH382
Course Title: Analytical Chemistry I Laboratory
(If a new or renumbered course, please check with the Registrar regarding the use or reuse of the course number)

1.2 ☒ This is a New Course.
OR
☐ This is a Major Course Revision
OR
☐ This is a Minor Course Revision

If this is a Course Revision, please see Course Proposal Form – Instructions and Guidance to determine if your revision is major or minor. Indicate below the reason(s) for the revision.

(Please check all that apply)
☐ Course Number/Division ☐ Learning Outcomes ☐ Institutional Resources
☐ Title ☐ Concepts, Content ☐ Semester Offered
☐ Credit hours ☐ Catalog Description ☐ Course Inactivation
☐ Pre- or Co-requisite(s) ☐ Instructional Methods ☐ Course Reactivation
☐ Format ☐ General Education

1.3 General Education knowledge and skills area (if applicable): If none, check here ☒

☐ American History ☐ Humanities ☐ Other World Civilizations
☐ The Arts ☐ Mathematics ☐ Social Sciences
☐ Basic Communication ☐ Natural Sciences ☐ Western Civilization
2. Proposer Need Statement:

2.1 Describe why this course (or course revision) is needed to meet current or proposed goals and outcomes of the program or College, and, if a revision, provide an explanation of and justification for the revision. I am proposing this revision to better differentiate between the lecture and laboratory portions of this course (when combined, this course was FCH380). When combined, it is difficult to gauge whether the students are meeting the student learning outcomes for the laboratory-based aspects of this class when 2/3 of their grade is dedicated to content specific to the lecture-based portion only. The laboratory-based portion of the course is complementary to the lecture, but there is no formal overlap that requires the two to be offered using the same course number. The lecture portion of the course will keep the prior course identifier (FCH380) and the laboratory course will be offered as a new course with a new course identified (FCH 382).

2.2 List the pre-requisite or co-requisite courses (taught within the home department or taught by another department) and explain their relationship to the proposed course. Pre-requisite: General Chemistry I & II. Pre-/Co-requisite: FCH 380.

2.3 Explain the impact of this course in meeting the goals and outcomes of other Departments/programs (if any). I am proposing to separate the lecture and laboratory portions of a prior course (FCH380) into two distinctive courses rather than have them combined. FCH 380 will become lecture-based and a new course, FCH 382, will become the laboratory portion of the course. This should not change the goals and outcomes of the Chemistry or Biochemistry majors in the Chemistry department or any other departments in which students take this course.

2.4 If the proposed course is designed to fulfill SUNY General Education Requirements, the Associate Provost for Instruction must review this proposal to ensure that General Education Requirements will be met for the specified knowledge area (See Instructions and Guidance). Please provide an explanation of how this course fulfills SUNY General Education Requirements. NA

2.5 What are the staffing requirements (instructor, TA, Lab tech, etc.) for this course? If a new course, are there new staffing needs or are there adequate staff members already in place? If a revised course, are there additional staffing needs? This course will require a TA, but there are no new staffing needs as a TA has previously been assigned to this course when it was offered in a combined (lecture+laboratory) format (FCH 380).

2.6 What Department (or extra-Department) resources are or will be made available to support the course or course revision? No additional resources beyond what is already available are needed.

2.7 Anticipated Enrollment (enter where applicable)

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<thead>
<tr>
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<th>Fall Semester</th>
<th>Spring Semester</th>
<th>Summer Semester</th>
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<td>30</td>
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2.8 Anticipated frequency of class meetings. 1 per week
3. DETAILED COURSE DESCRIPTION

3.1 COURSE IDENTIFICATION AND FORMAT:

3.1.1 Course Prefix and Number: FCH382
3.1.2 Course Name: Analytical Chemistry I Laboratory
3.1.3 Credit Hours: 1
3.1.4 Semester (check all that apply): Fall ☑ Spring ☐ Summer ☐
3.1.5 Format (check as appropriate): Lecture ☐ Online ☐ Lab ☑ Field ☐ Other ☐ (explain)
3.1.6 Contact hours per week: 3
3.1.7 Prerequisite(s) – if none, please enter "None" (Be specific, as Upper Division courses and Graduate courses will likely have some pre-requisite knowledge) Pre-requisite: General Chemistry I & II. Pre-/Co-requisite: FCH 380.

3.2 SCOPE:

3.2.1 Level of Instruction (check one, or two if a shared resource course):
   Lower Division ☐ Upper Division ☑
   Beginning Graduate ☐ Advanced Graduate ☐

3.2.2 Relation to curriculum or to other ESF or Syracuse University courses:
   a. Is this a required course? No ☐ Yes ☑.
      If Yes, please list the program(s) for which it is a requirement: Chemistry
   b. Is this an elective course within your department? No ☑ Yes ☐.
   c. Is enrollment in this course restricted? No ☑ Yes ☐.
      If Yes, please explain: NA
   d. Are other ESF or SU courses similar or identical to this course? No ☑ Yes ☐.
      If Yes, please identify the courses: NA
   e. Is this course a shared resource offering (i.e. is there a graduate or undergraduate concurrent offering)? No ☑ Yes ☐.
      If Yes, what is the course number of the concurrent offering? NA

3.3 STUDENT LEARNING OUTCOMES:

Identify the student learning outcomes associated with this course. After successfully completing this course, the students will be able to:

1. Accurately and precisely use volumetric methods of chemical analyses to determine the concentrations of unknown analytes in a solution.

2. Analyze and interpret the results of a chemical analysis and effectively communicate these results in written reports and other formats.

3.4 MAJOR CONCEPTS, PROCESSES or TOOLS:

Identify the course content and themes (e.g. Table of Contents) consistent with the learning domains and outcomes. The course will cover the following concepts:
1. Using volumetric glassware (pipettes) for accuracy and precision
2. Using volumetric glassware (burettes) for accuracy and precision
3. Using volumetric glassware (volumetric flasks) for accuracy and precision
4. Selecting the proper indicator for different types of titration
5. Creating buffer solutions
6. Measuring the concentration of ions in an unknown solution using titrations
8. Measuring the concentration of fluoride in an unknown solution using an ion-selective electrode

3.5 INSTRUCTIONAL METHODS:

Identify the methods used to meet the course outcomes, as well as the principal instructional methods. This a laboratory course, so each week the students will work either individually or in pairs to complete the required experiment for that day. At the conclusion of each experiment the students will be required to turn in a laboratory handout and/or write a report based on their findings.

3.6 CATALOG DESCRIPTION

Provide the course description using the precise format to be included in the ESF catalog (i.e. course number and title; format; brief description; semester(s) offered; and pre-/co-requisites). Please do not exceed 1000 characters.

FCH 382 Analytical Chemistry I Laboratory

One three hour laboratory per week. Laboratory experiments will focus on: analyzing and interpreting the results of a chemical analysis and effectively communicate these results in written reports and other formats; and accurately and precisely using volumetric methods of chemical analyses to determine the concentrations of analytes in a solution. An emphasis will be placed on making serial dilutions, creating buffers, and performing titrations. Fall.

Pre-requisite: General Chemistry I & II. Pre-/Co-requisite: FCH 380.

3.7 COURSE HISTORY:

Provide the dates of prior approval of this course, and its revision history. November 4, 2011 was when the most recent course revision was completed when this portion of the course was combined with FCH380 before this proposed split.

3.7.1 Relationship to current ESF courses

This course is replacing a current ESF course  □ YES  ✗ NO

If NO, then proceed to section 4 below.
If YES, then provide below the number and name of the course to be deactivated and removed from the catalog once this course proposal has been approved:

Course Number (of the course to be replaced)
Course Name (of the course to be replaced)

If the course to be replaced is used by departments other than the department sponsoring this proposal, please indicate below which departments are affected and the date they were notified about the course replacement.

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<th>Department</th>
<th>Date of Notification</th>
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</table>
4. Institutional Impacts:

This section pertains to forecasting institutional resource needs to support the course or course revision. Provide clear statements regarding the needs and current availability (or absence) of resources. Note that, if this is a course revision, only the impacts of the revision should be included.

Staffing needs: 1

Classroom resources (e.g. physical facilities in a laboratory, lecture hall, flexible space, academic computing): Laboratory

Technology Resources: None

Computing Resources (software licensing, hardware, access): None

Library Resources (subscriptions, services): None

Transportation Requirements (budget, fees, fleet vehicles): None

Forest Properties or Field Practicum Facilities: None
5. Health and Safety Considerations:

Will any of the conditions or situations outlined below be present in association with the course? Yes / No

5.1. Will substances with any of the following properties be used during instruction: flammability, toxicity, corrosivity, reactivity, registered pesticide, legally controlled, or other characteristics with the potential to cause harm or injury? ☒ / ☐

5.2. Will any physical hazards be present during instruction? (e.g., machines that need safety guards; razor blades or syringes; compressed gases, etc.). ☐ / ☒

5.3. Will any biological hazards be present during instruction? (e.g., handling animals (rabies or hantavirus); cultures or stocks of infectious agents (fungal spores, viruses, bacteria, etc.). ☐ / ☒

5.4. Will any radiation hazards be present during instruction? (e.g., radioisotopes, X-rays, ultraviolet rays, lasers, etc.). ☐ / ☒

5.5. Will any electrical equipment that, due to its design, location, or method of use, pose any threat to safety during instruction? (Give considerable thought to electrical use outdoors, or any potentially wet location.). ☐ / ☒

5.6. Will there be any personal safety issues related to the class? (e.g., due to time of day or location, at the end of any organized class exercise, will students be in danger of physical assault, etc.). ☐ / ☒

5.7. Will any students be driving official state or research sponsored land or water vehicles during any class or instructional exercise? ☐ / ☒

5.8. Will any type of personal protective equipment be necessary during class exercises? (e.g., hard-hats, eye/face protection, hearing protection, hand/foot protection, lab coat, visibility clothing, etc.) ☒ / ☐

If the answer was “Yes” to any of the HEALTH AND SAFETY questions, please explain: As this is a chemistry laboratory course, chemicals that may pose minor risk to students will be used under tight supervision by the faculty member on record, the teaching assistant, and the laboratory coordinator. For the students’ safety, they will be required to wear safety glasses when performing all experiments and gloves will be provided when there is a risk for skin irritation if there is an accidental exposure. The students will go through the safety protocols of the laboratory on the first day of class, the safety protocols are provided in their laboratory manuals, and there will always be someone present to supervise the class when it is in session.

For lab and field courses to which all answers are “no”, you should explain that here, also. Normally, we would expect some safety precautions for such courses.NA
6. Coordination and Consultation

Emails/letters, as noted below and attached to this proposal, or signatures below, indicate that the affected departments, programs or units have been notified of this proposal and have had an opportunity to assess the impact of the proposal on their respective units.

Affected Academic Department(s) or Program(s) – other than the sponsoring department:

<table>
<thead>
<tr>
<th>Environmental and Forest Biology/Biotechnology</th>
<th>Name of Chair/Program Director</th>
<th>Date</th>
<th>Or letter attached □</th>
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<tr>
<td>Department/Program 1</td>
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<td>Department/Program 2</td>
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<td>Chair Signature</td>
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<td>Department/Program 3</td>
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<td>Chair Signature</td>
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[If more than three Departments/Programs, please continue on a separate page]

Other Units:

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<tr>
<th>Associate Provost for Instruction &amp; Dean of the Graduate School (for Gen Ed courses only)</th>
<th>Date</th>
<th>Or letter attached □</th>
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<tr>
<td>Registrar</td>
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<td>Library Director</td>
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<td>Computing and Network Services</td>
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<td>Physical Plant</td>
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<td>Forest Properties</td>
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<tr>
<td>Environmental Health and Safety</td>
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7. Proposer Information and Sponsoring Department Chair Affirmation:

Contact Person:
Name: Jaime Mirowsky ____________________________
Department: Chemistry ____________________________
Email: jmirowsk@esf.edu ____________________________ Phone: 315-470-6850

This proposal has been reviewed and approved by the sponsoring Department. Affected departments have been notified and given the opportunity to provide feedback. Department resources are or will be made available to support the course, or a plan is in place to meet the resource needs as identified in the Institutional Impacts section of this proposal (see Section 4, above).

Name: ____________________________ Date: ______
Department Chair (or designated curriculum representative)
Signature: ____________________________ Or letter attached □
Department Chair (or designated curriculum representative)

8. Approvals:

_________________________________________ Date
Curriculum Committee

_________________________________________ Date
Faculty Governance

_________________________________________ Date
Provost