Instructor: Dr. ‘Tayo Odunuga
Department: Chemistry and Biochemistry
Email: odunugaoo@sfasu.edu
Phone: (936) 468-6468
Office: 104 Bush Mathematical Sciences Building
Class time: To be discussed and agreed with the instructor. 1 credit hour = 3 hours of lab time.
Place of Meeting: Room 309, Lehmann Chemistry Building
Office Hours: Monday to Friday: 9:30 a.m. – 10:30 a.m.
Course Description: Individual study and/or laboratory research.
Number of Credit Hours: 1 – 4 semester hours

Course Prerequisites and Corequisites: Prerequisite: Permission of instructor. Pass-Fail grading.

Program Learning Outcomes:
1. The student will perform qualitative/quantitative chemical analyses/syntheses using modern instrumentation.
2. The student will articulate scientific information through oral communication. (depending on instructor or project)
3. The student will articulate scientific information through written communication.
4. The student will demonstrate ability to integrate knowledge content, laboratory skill, critical thinking and problem solving, and communication skills via participation in research projects.

General Education Core Curriculum Objectives: There are no specific general education core curriculum objectives in this course. This course is not a general education core curriculum course.

Course Objective: The student should demonstrate their ability to conduct independent research.

Student Learning Outcomes: Upon completion of this course, students will be able to:
- apply the chemistry knowledge obtained during the college career. (PLO 1, 4)
- analyze experimental results based upon trends in data. (PLO 3)
- practice the safe use/handling of chemicals and their proper storage. (PLO 1)

Outline of Topics (approximate course time):
Variable: dependent on instructor and selected course content.

Text and Materials:
Lab notebook and literature pertaining to research topic.
**Course Calendar:**
Student will be involved in the conduct of faculty research under the guidance of the professor. The student will meet with the professor as arranged to discuss the research for the day/week.
This course is for 1 hr. credit and repeatable. The course involves a mentored research experience for the duration of a semester (8 weeks) designed to develop research skills through participating in research and to develop some of the skills needed for professional success after graduation. Students are expected to prepare prior to each lab (literature and concepts), attend research hours (minimum of 3 hours per week per credit hour to conduct the research), and report results (paper, presentation). Students have required academic components and deliverables: written work (daily notebook, research paper) and oral presentation. These activities average a minimum of 6 hours of work each week per credit hour.

**Grading Policy:**
*Final Report:* This report should cover the background material for the project, data, and interpretation of the results. This report should be written following the guidelines of the department (see below). Report is due during exam week.

*Weekly Report:* The student will develop and maintain a record of all research conducted during the week. The report should be in the following outline:

**General laboratory notebook outline**
1. Title
2. Dates
3. Name(s) of Partner(s) if applicable
4. Short but relevant introduction with references if necessary
5. Procedure: flowchart, bullets, diagrams
6. Results/Data presented in appropriate format
7. Discussion and Conclusion
8. Continuity – what to do next

**Criteria for grading laboratory notebook**
1. Organization – see above
2. Amount of content

Professionalism: This includes keeping deadlines, promptness to scheduled meetings, good behavior, following instructions etc.

**Method of Evaluation:** Grading scale will be pass/fail and will consist of the following:

- Attendance/professionalism - 30% (≥ 93% of points required to pass the course)
- Final Report - 30% (≥ 70% of points required to pass the course)
- Notebook - 40% (≥ 77% of points required to pass the course)

**Overall Grading scale** - Pass ≥ 80%; Fail < 80%
CHEMISTRY – FINAL REPORT GUIDELINES

1.) Title Page
2.) Abstract
   This is a short, quantitative discussion of the main purpose and findings of the experiment. It should be stated clearly and briefly. What was done and what results were obtained.

3.) Introduction
   In general, the section will consist of a brief review of the major field, and a more intensive coverage of the specific topic at hand. You want to give the background of the project which will help define your purpose.

4.) Materials and Methods
   Should begin with a listing of where the chemicals used were obtained, what the purity was, and any prior purification of the starting material. The manufacturer and model number of all major equipment should be listed. The manner in which spectra were obtained should be included. The experimental equipment and glassware should be described, with a diagram if necessary. All diagrams should be labeled and numbered. All steps performed in the experimental procedure should be listed in the order that they were performed, in exactly the manner in which you performed them. Observations as to physical and chemical changes should be included.

5.) Results
   List all data obtained with information provided as to how the data was obtained, as well as the experimental accuracy of all measurements. The data should be compiled into tables or graphs if appropriate. All figures, spectra, and tables should be labeled, contain important parameters, and numbered. Only significant results should be presented.

6.) Discussion
   Data should be discussed and evaluated, both positively and negatively. Do not try to twist the data to fit the results you think should be obtained. Let the data ”speak for itself”, and evaluate the data fairly, even if the data seem to contradict the theory you may have been expecting the data to follow. If theory predicted a straight line and your results confirmed the theory, then say so, remembering that the slope and the intercept may be of importance also. If the anticipated straight line was not obtained, say so, and give reasons why it was not obtained. Explain why or why the data does not agree with the theory. Bear in mind that the Discussion is the building block for the Conclusions. One should be able to read your discussion without making undue reference to your results section. Quite often the results of an experiment do not confirm theory. The reader will be interested in why the discrepancy exists, and it is the function of the writer to supply the information. Use the discussion section for comparison, generalizations, and other relations. Don’t describe your graphs verbally; discuss their significance. A discussion of possible sources of error should be included as well as any limitations which may have affected the validity, and/or application of the results.
7.) **Conclusion**
   The conclusions are deductions from the results, not statements of the results. The conclusions should be limited to the experimental work at hand, but if the work confirms or is contrary to accepted theory, a conclusion may be written based on that fact. Purely personal opinions or general statements should not be written. In a well-written report, the reader will have been led to the point where the writer’s conclusions seem obvious and inevitable.

8.) **Recommendations**
   This section should include recommendations for changes in equipment or procedure to improve accuracy or usefulness of the results for future work. The basis for these recommendations should have been developed in the discussion section. You should state the problem; describe the effect it has on the results, and how to fix the problem.

9.) **Reference**
   A minimum of 6 peer-reviewed articles is required in the report. The referencing format should follow the Journal of Chemical Education guidelines found at:
   [file:///Z:/my%20documents/SFA%20files/Teaching/Spring%20semester%20files/Spring%20202019/CHE%2020470/JCE%2020Referencing%20Guidelines.pdf](file:///Z:/my%20documents/SFA%20files/Teaching/Spring%20semester%20files/Spring%20202019/CHE%2020470/JCE%2020Referencing%20Guidelines.pdf)

10.) **Appendices**
   **Note:** Report must be typed in 12 pt. font, 1 in. margins

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**ATTENDANCE POLICY:**
The student will work at the student's own pace, but instructor must be informed of the student's hours that he/she will work. The student is expected to have thought through the research activities and to present an outline.

**The Code of Student Conduct and Academic Integrity** outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer
Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

**Withheld Grades Semester Grades Policy (5.5)**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the coursework because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course to compute the grade point average. For additional information, go to [https://www.sfasu.edu/policies/course-grades-5.5.pdf](https://www.sfasu.edu/policies/course-grades-5.5.pdf).

**Students with Disabilities**
To obtain disability-related accommodations, alternate formats, and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services promptly may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

**Student Wellness and Well-Being**
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**
**The Dean of Students Office** (Rusk Building, 3rd floor lobby)
[www.sfasu.edu/deanofstudents](http://www.sfasu.edu/deanofstudents)
936.468.7249
[dos@sfasu.edu](mailto:dos@sfasu.edu)
SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

Crisis Resources:
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- johCrisis Text Line: Text HELLO to 741-741

The professor reserves the right to alter the course calendar, grading policy, and dates/times of exam of this course due to weather, university events, improved student learning, etc. Students will be notified in class and/or via email concerning any changes.