San José State University  
Science/Chemistry  
Chemistry 270, Advanced Analytical Chemistry, Fall, 2018

Course and Contact Information

Instructor: Joseph J. Pesek
Office Location: Duncan Hall 501
Telephone: 408-924-4950
Email: joseph.pesek@sjsu.edu
Office Hours: MW 1230 – 1330 and by appointment
Class Days/Time: T 1800 - 1940
Classroom: Duncan Hall 415
Prerequisites: Chemistry 155 (with a grade of "C" or better; "C-" not accepted)

MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas learning management system course website. You are responsible for regularly checking with the messaging system through MySJSU (or other communication systems as indicated by the instructor) to learn of any updates.

Course Description

Introduction to theories and techniques of HPLC and LCMS. Lecture 2 hours.
Good analytical techniques and methods are essential for a wide-range of research, development and quality control in many types of laboratories. This course will exam HPLC and LCMS and in particular more recent developments that have greatly improved the accuracy, precision and information content of analyses done in a variety of application fields. In all cases, regulatory agencies have increased the requirements with respect to the major components found in samples as well as the minor constituents that provide little or no beneficial value to products and in some cases may have toxic effects.

Course Learning Outcomes (CLO)

Program Learning Objectives #1 - To demonstrate an advanced understanding of selected topics in chemistry.

Program Learning Objectives #2 - To demonstrate information literacy skills for acquiring knowledge of chemistry, both as a student and as a life-long learner.

Program Learning Objectives #3 - To demonstrate an understanding of experimentation, observation and data analysis, and their application to defined questions in chemistry.
Program Learning Objectives #4 - To demonstrate a familiarity with available instrumentation for conducting specific scientific research.

Program Learning Objectives #5 - To communicate effectively, verbally and written, for the purposes of conveying chemical information to both professional scientists and to the public.

Upon successful completion of this course, students will be able to:
Demonstrate understanding of core concepts and theory as well as applications of HPLC and LCMS.

Course Requirements and Assignments
SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Hour Exam: Tuesday, October 16th
Final Exam: Tuesday, December 18th 1715-1930.

NOTE that University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Final Examination
The final exam is comprehensive and includes all of the topics covered during the semester. Review the lecture notes posted on Canvas.

Review Paper
You must pick a topic approved by the instructor related HPLC or LCMS. Being a review, a minimum of five references are required. The paper must not only be a review/summary of the information provided in the literature references, but must also evaluate/compare the importance of the references cited.

Due Date: Noon, December 17th

Grading Information
GRADING: The course grade will be based on the scores obtained for the one hour-exam, the final exam and the review paper.

1 Hour exam @ 100 pts
Final exam @ 200 pts
Review paper = 200 pts

Total Course Pts. = 500
Determination of Grades

There is not a fixed grading scale for the course. The average grade will be in the “B” range. The percentage of the grade for each component of the course can be calculated from the point scale listed in the “Grading Information” section above. There is no extra credit.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction preparation/studying or course related activities.

Classroom Protocol

PARTIAL LECTURE NOTES are available on CANVAS. The notes are not complete but will make it easier for you to follow the lecture material. They ARE NOT a substitute for attending lecture. You are expected to arrive at the start of the class and remain quiet after the lecture begins. There is no cell phone use or texting allowed during class and during exams. Only scientific calculators can be used during exams. Electronic devices that allow storage of information are prohibited. You are responsible for bringing your own calculator to each exam. None will be provided by the instructor or the proctor.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs, Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo

Chem 270 Fall 2018, Course Schedule

Below is the approximate schedule (order in which topics will be covered) for the semester. Any changes will be announced in class and posted on the Canvas course page. Chapters refer to the text listed above.

Review and Background Information

(For your review only, will not be covered in class)

Course Schedule (May change slightly depending on discussions)

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<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>1</td>
<td>Course orientation and HPLC theory</td>
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<tr>
<td>2</td>
<td>HPLC Theory</td>
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<tr>
<td>3</td>
<td>HPLC Theory and discussion of review paper</td>
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<tr>
<td>4</td>
<td>HPLC Theory</td>
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<td>5</td>
<td>HPLC Instrumentation</td>
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<td>6</td>
<td>HPLC Instrumentation</td>
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<td>7</td>
<td>MS and LCMS, discussion of review paper</td>
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<td>8</td>
<td>Exam</td>
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<td>9</td>
<td>MS and LCMS</td>
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<td>10</td>
<td>MS and LCMS</td>
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<td>11</td>
<td>HPLC applications</td>
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<tr>
<td>12</td>
<td>HPLC applications and discussion of review paper</td>
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<td>13</td>
<td>HPLC application</td>
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<tr>
<td>14</td>
<td>HPLC applications</td>
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<td>15</td>
<td>Review for final</td>
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Final Exam: Tuesday, December 18th, 1715 - 1930