Dr. Gita Sathianathan  
Office: IRVC Room TBA (Irvine Campus)  
Phone: 657-278-3881  
Office Hours: Wed. 1.30 to 2.30pm, Thurs 1.00-2.00 pm,  
E-mail: gsathianathan@fullerton.edu  
Queries will also be answered by email in 24-48 hours.

Prerequisites  
This course requires Chemistry 100 or Chemistry 115 as a pre-requisite. This course fulfills GE requirements in non-science majors.

Course Description

The general goals of this lab are to understand broad, unifying themes in chemistry from a cross-disciplinary perspective; to solve chemistry puzzles using mathematical and scientific reasoning; and to learn how concepts and applications of chemistry are used to solve problems affecting communities in general.

Chemistry 100 L is an introductory laboratory course in which students are introduced to basic chemical principles, and perform experiments chosen to develop laboratory techniques and fundamental chemical concepts. Students will use virtual laboratory equipment, collect data, and analyze data through calculations and graphing techniques.

We will apply scientific methodology through active experimental methods in each of the Lab activity. The Lab Reports submitted online requires that you evaluate the validity and limitation of the theories being tested using the experimental data collected during lab activity.

Experiments are chosen to develop laboratory techniques; chemical principles and their application to environmental and societal problems.

In compliance with UPS411.104 Section II E, this course will have Online Instruction with Required Course Meetings. Students need to come to campus three times for course activities such as orientation, lab lectures and exams.

Virtual Labs using Latenitelabs  
The Online course is supported by Latenitelabs.com, Macmillan New Ventures LLC. There will be weekly labs that students can access on the Latenitelabs site. The Online labs mimic labs done by regular labs, but would use virtual equipment and materials.

Lab Lecture: There will be four meetings for the entire semester that require mandatory attendance. Exams will be conducted during the lab lectures.
During each Lab lecture, the Instructor will explain the
• scientific goals of the lab,
• details and reasoning for protocols followed,
• chemical principles that are applied and the logic behind the principles
• sample analyses of the lab results, including graphical analyses and evaluation of the best methods for achieving the proposed goals
• calculations involved and examples
• error analyses in data collection and it’s implications in the results obtained
• the fundamental principles of Chemistry involved in the lab with reference to lectures presented in Chem 100.

There will be four Lab Lectures scheduled for the semester that requires mandatory attendance. Each Lab lecture will prepare students for the subsequent 3-4 labs.

Required Materials: Access to Latenitelabs. Details below*.

Schedule of Lab Lectures:
The there will be two sections of this Laboratory online. You must choose one of the sections to enroll. You must choose one of the lab lecture times, either Friday 6-9 pm or Saturday 1-4 pm for all four lab lectures. The Gradebooks, Assignments and Exams are different for each section and therefore, you must choose either Friday evening for all Lab lectures OR Saturday afternoon for all Lab lectures. You cannot mix and match dates nor can you attend both. If you have a valid documented excuse, then you may attend the other session (i.e Friday students can attend Saturday and vice versa). You MUST attend all four lab lectures as the exams will be given during this time. No make-up exams without a medical/emergency documentation.

CHEM 100L-80(20644)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Lab Lecture on</th>
<th>Exam</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri, Jan 29</td>
<td>6-9 pm</td>
<td>Experiments 1-3</td>
<td>Exp. 1, Quiz</td>
<td>IRVC Room TBA</td>
</tr>
<tr>
<td>Fri, Feb 26</td>
<td>6-9 pm</td>
<td>Experiments 4-6</td>
<td>Exp. 1-3</td>
<td>IRVC</td>
</tr>
<tr>
<td>Fri, Mar 25</td>
<td>6-9 pm</td>
<td>Experiments 7-9</td>
<td>Exp. 4-6</td>
<td>IRVC</td>
</tr>
<tr>
<td>Fri, Apr 22</td>
<td>6-9 pm</td>
<td>Experiments 10</td>
<td>Exp. 7-9</td>
<td>IRVC</td>
</tr>
</tbody>
</table>

CHEM 100L-81(20645)

<table>
<thead>
<tr>
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<th>Time</th>
<th>Lab Lecture on</th>
<th>Exam</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sat. Jan 30</td>
<td>10am-1 pm</td>
<td>Experiments 1-3</td>
<td>Exp. 1, Quiz</td>
<td>IRVC Room TBA</td>
</tr>
<tr>
<td>Sat. Feb 27</td>
<td>10am-1 pm</td>
<td>Experiments 4-6</td>
<td>Exp. 1-3</td>
<td>IRVC</td>
</tr>
<tr>
<td>Sat. Mar 26</td>
<td>10am-1 pm</td>
<td>Experiments 7-10</td>
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<td>10am-1 pm</td>
<td>Experiments 10</td>
<td>Exp. 7-9</td>
<td>IRVC</td>
</tr>
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</table>
*Required Materials:

- Latenitelabs must be purchased online before the first Lab lecture. *Student pricing is $59.95 per student, per semester.*
- This price includes access to all labs, assignments, and assessment tools. There are no other costs involved, and no licensing fee. Details are available to students on the [pricing page](mailto:sales@latenitelabs.com) or by emailing [sales@latenitelabs.com](mailto:sales@latenitelabs.com).
- Late Nite Labs is currently available for all PCs and Apple Macs. They are not currently available for use with tablets or phones. The preferred browser is Mozilla Firefox or Safari.

To register, students will go to [labs.latenitelabs.com/register](mailto:labs.latenitelabs.com/register). Students must enter their CSUF email and a password as well as their contact info and Section Code (8 digits given by instructor), PIN code or credit card for payment. A student manual is available at the site [student manual](http://static.latenitelabs.com/production/promo/pdfs/Student_manual_for_download.pdf). *You must not share your PIN or Section code with anyone* as you will be responsible for any attempts of plagiarism resulting from this exchange. Latenitelabs will be able to access all login attempts, electronic activities and I.P addresses as needed.

- For purchasing and refunds, students will contact Customer Support at 1-800-262-0518 or email [support@latenitelabs.com](mailto:support@latenitelabs.com) or the bookstore.

- There are two ways students can purchase access: through a school’s bookstore, or directly through the Latenitelabs.com site. Both methods cost the same. If students elect to purchase access directly through the Website, they can purchase access themselves with a credit card at any time using Visa, MasterCard, American Express, and Discover card. Students who purchase access directly on LNL Website with a credit card do not use PIN codes. This would be the preferred mode of purchasing access. Students using financial aid may elect to purchase access from the bookstore. Latenitelabs will email PDFs containing unique PIN codes to the bookstore. The bookstore will then distribute the PINs as it would any other school supply. Then students can use their individual PIN codes to register their account on the LNL website.

- In order for students to enroll in the course they will need their Section Code, which is different from the PIN. Instructors will have the Section Code listed on the Syllabus or email the students before the classes begin. Students must bring PIN to first Lab lecture.
- In case of LNL technical problems students can contact [support@latenitelabs.com](mailto:support@latenitelabs.com)
- Additional reference materials for the labs can be found in the Library [http://www.library.fullerton.edu/services/](http://www.library.fullerton.edu/services/)

**Registering on Latenite labs**

Please complete the registration on Latenitelabs.com. The program will prompt for a section. Please include the Section Code below.

<table>
<thead>
<tr>
<th>SURVEY OF GENERAL CHEMISTRY LABORATORY SP16 / CHEM100L SP16</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION 1: FRIDAY 6-9 PM LAB LECTURE. SECTION CODE 43295787</td>
</tr>
</tbody>
</table>

Students can register at latenitelabs.com for the Friday evening Lab lectures using: SECTION CODE 43295787
Students can register at latenitelabs.com for the Saturday Lab lectures using:
SECTION CODE 72556949

If your bookstore will be placing an order with us, please use the ISBN:
9781464173677

Assessment:
The labs are organized chronologically and a new lab will appear weekly with links to virtual labs having specific due dates. The Online labs have Short Answer questions that students will answer online. This will be equivalent to the Lab Reports that are submitted for resident instruction labs. Students would need to run the labs and enter the data onto a template provided at the site and answer questions pertinent to the lab on the questionnaire provided with each experiment. There will be Quiz accompanying each online Lab which will have due dates that would be listed. In addition, there will be lab exams that will be held during on-campus meetings.

Assignments and Grades:
- Short Answer Lab Reports, Notes and quizzes (10 x 6.4% each) 64%
- Lab Lecture 1: Online quiz and Lab assignment 4%
- Exams 2, 3 and 4 Held on Lab Lectures 2, 3 and 4 30%
- Attendance and, Laboratory conduct and ‘Netiquette’, 2%

Total 100%

The grades will be assigned at the end of the semester based on the overall average of the class. Approximately 20% of the students scoring the highest grades in the class will earn an A/A- grade; the next 20-25% would be assigned a B+/B/B- grade. You must earn above 60% in the lab in order to obtain a C grade. Gradelines will be posted after the third exam if they are different from the syllabus.

Late work will not be accepted. In case of technical difficulties affecting the whole class, due dates will be adjusted until the problem is fixed. Exams and Labs will be graded a week after the due date and the grades for the labs will be posted on Latenitelabs. Exam grades will be on Titanium. If you miss the deadline for more than TWO labs, you will not be able to pass this class unless you have a documented excuses for the absences. To calculate your percentage grade
\[ \text{Percentage grade} = (\text{Latenitelabs}/275 \times 0.62) + (\text{Exams1+2+3}/155 \times 0.3) + (\text{Quizzes}/100 \times 0.06) + (\text{Attendance}/30 \times 0.02) \]

Typically > 89% A; > 78% B; > 60% C. If there are changes to these, we will let you know on the Announcement Page.

Emergency Preparedness:
In case of earthquakes or other emergencies, students will leave the classroom immediately with their belongings and assemble at the Nutwood parking lot at Fullerton or the Banting Parking lot at Irvine. http://prepare.fullerton.edu/

Academic Integrity:
Students must accept responsibility for earnest effort toward understanding the subject, and should not cheat on any assignment for this course. Students must perform all of their own
work. Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism, and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show a possession of a level of knowledge or skill, which he/she in fact does not possess.

Cheating is defined as the act of obtaining or attempting to obtain credit for work by the use of any dishonest, deceptive, fraudulent, or unauthorized means. Example 1. Obtaining or attempting to obtain questions and/or answer to exams/quizzes in advance or during the exam/quiz.

2. Colluding with another person during an exam.
3. Having an exam or assignment completed by another person.
4. Using any unauthorized material, including the internet, during an exam or quiz.
5. Copying material from a website or other source without full referencing of the original author.
6. Opening any part of the Titanium course while taking a quiz or exam.

Basically, any attempt to gain an unfair advantage over other students using any method, will be viewed as academically dishonest.

A. Plagiarism is defined as the act of taking the work of another and offering it as one’s own without giving credit to that source. When sources are used in a paper, acknowledgment of the original author or source must be made through appropriate references and, if directly quoted, quotation marks or indentations must be used.” (CSUF Policy 300.021, effective 6 May 2005). Please make sure you understand what plagiarism is and how to avoid it. For more information on this topic please see http://www.fullerton.edu/deanofstudents/judicial/Plagiarism.htm.

Authentication of student work: Authentication of student work is accomplished by requiring multiple types of assessments: formal exams, assignments, email contact with the instructor, short quizzes, and longer exams. Please familiarize yourself with the academic integrity guidelines found in the current student handbook. All acts of academic dishonesty will be reported to the Dean. The minimum penalty for cheating or plagiarism in this course is 10% of the final course grade, even if the assignment in question was worth significantly less than that. The maximum penalty is failure of the course. Penalties are given based on the severity of the incident (as determined by the instructor) and the weight of the assignment or exam in question. Penalties are at the instructor’s discretion.

Appropriate online behavior “Netiquette”:
Students enrolled in online instruction courses will be subject to the same university policies and procedures applicable to students attending courses on campus. Academic standards regarding cheating, plagiarism, and appropriate online behavior (“Netiquette”) will be clearly communicated to students in online instruction courses. UPS 300.021 Academic Dishonesty. http://www.albion.com/netiquette/corerules.html

• Use of class email lists in TITANium should not be used by students without prior permission by the instructor.
• Email queries must list the Lab topic on the Subject, and must have a greeting, the query in polite and complete sentences, and the first and last names of the student at the end in order to receive a response. Students may be blocked for inappropriate language.
• Emails will be responded to within 48 hours during weekdays. All emails received 24 hours before due date will be responded to before the deadline for the latenitelab.

• Special Needs:

Please let me know at your earliest, if you need special accommodations for exams, http://www.fullerton.edu/DSS/)

Technical competencies expected or required of the students:
The LNL labs will train students on the use of their virtual lab equipment. All entering students are expected to be knowledgeable in the use of a personal computer (PC or Macintosh) prior to being admitted to the university. Entering students should have

1) the ability to use a PC to locate, create, move, copy, delete, name, rename, and save files and folders on hard drives and on secondary storage devices such as memory sticks;

2) the ability to use a word processing program and an excel program that runs on a PC or Macintosh computer to create, edit, format, store, retrieve, and print documents; the ability to plot a graph of two variables, use trendlines, find slope and correlation co-efficients, make experimental judgements based on graphical analyses.

3) the ability to use an electronic mail system to receive, create, edit, print, save, and send an e-mail message with and without an attached file; and

4) the ability to use an Internet browser to search the World Wide Web. Students who feel they do not meet the expected level of competency, should contact the Academic Advisement Center at 657-278-3606.

Minimum computer hardware and software specifications, and course website access requirements: Students should identify an alternative computer to use in case their personal computer isn’t so reliable.

SoftwareRequirements: MS Office available at reduced rate from the Titan Shops. Students must use the CSUF email and access class through the portal http://my.fullerton.edu.

FOR PC USERS: Minimum Hardware: 1 Ghz or higher multimedia processor; 1GB RAM; DSL or cable modem is recommended. Minimum System Software: XP or higher Operating System, Internet Access (an Internet Service Provider) and an internet browser (Students must use Firefox for Titanium features to work properly).

FOR MAC USERS: Mac requirements:1Ghz or higher multi- mediasrocessor, OS X or higher. Firefox. For Technical Assistance, the CSUF Help desk can be contacted at: helpdesk@fullerton.edu or 657-278- 7777, or by visiting
www.fullerton.edu/helpdesk/index.asp

The Course Schedule will be available on Latenitelabs. All due dates on Latenitelabs have to be followed strictly for Labs and Online Quizzes. Late work will not be accepted. Changes to Lab or Quiz due dates, if any, would be made on Latenitelabs index page.

Please check your Titanium Announcements and news weekly.

Best Wishes!
<table>
<thead>
<tr>
<th>Exp #</th>
<th>Experiment</th>
<th>Goal</th>
<th>Description of Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-Jan</td>
<td>Quiz 1</td>
<td>Orientation</td>
<td>Lab Lecture on Experiments 1-3</td>
</tr>
<tr>
<td>30-Jan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expt 1</td>
<td>Density</td>
<td>Students master the concept of density.</td>
<td>Students measure the volume and mass of representative liquids and solids. They graph their volume and mass measurements from several samples and calculate density by determining the slope of the line.</td>
</tr>
<tr>
<td>Expt 2</td>
<td>Identifying Unknown Substances From Characteristic Properties</td>
<td>Students determine the intensive properties of unknown samples and use their findings to identify the samples.</td>
<td>Students measure solubility, density, melting and boiling points of unknown substances. They then compare their findings to known literature values of solids and liquids, in order to identify the samples from among the tables of compounds.</td>
</tr>
<tr>
<td>Expt 3</td>
<td>Separating a Mixture of Compounds</td>
<td>Students separate the components of a mixture of sand, sodium chloride, and ammonium chloride. They first sublimate out the ammonium chloride from the mixture, and then add water to the remainder; sodium chloride dissolves in water, allowing it to be filtered out from the sand. Students are able to determine the mass and mass percentage of each component.</td>
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</tr>
<tr>
<td>26-Feb</td>
<td>Exam on Expts 1-3</td>
<td>Due Dates, Quizzes 1-3 on LNL</td>
<td>Lab Lecture on Expt 4-6</td>
</tr>
<tr>
<td>27-Feb</td>
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<tr>
<td>Exp #</td>
<td>Experiment</td>
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<tr>
<td>Expt 4</td>
<td>Law of Definite Proportion</td>
<td>Different samples of a pure compound always contain the same elements in the same proportions by mass.</td>
<td>In this experiment, two samples of Potassium Chlorate (KClO3) will be thermally decomposed. You will compare the mass percent of oxygen in the two different samples to confirm the Law of Definite Proportions.</td>
</tr>
<tr>
<td>Expt 5</td>
<td>Temperature Dependence of Salt Solubility</td>
<td>Students understand that salt solubility is temperature dependent.</td>
<td>Students prepare potassium chloride solutions with a range of concentrations and measure the temperature at which the salt begins to crystallize out of solution.</td>
</tr>
<tr>
<td>Expt 6</td>
<td>Mole to Mole Relationship Between Cu and Ag</td>
<td>Students determine the molar relationship between two reactants and use this ratio to write a balanced reaction equation.</td>
<td>After carrying out the reaction to produce copper ions and metallic silver ions in a solution, students determine the molar ratio between the two reactants; this ratio is converted to reaction coefficients in order to write a balanced equation.</td>
</tr>
</tbody>
</table>

| 25-Mar | Exam on Expts 4-6 | Due Dates, Quizzes 4-6 on LNL | Lab Lecture on Expt 7-9 |
| 26-Mar | | | |
| Expt 7 | The Apparent Molecular Weight of Air | Students test samples of air in sealed Erlenmeyer flasks to determine whether or not air behaves as an Ideal Gas. Next, they measure the relationships between volume, temperature, and pressure in each sample. If air behaves as such, they can use the Ideal Gas Equation to find its "apparent" molecular weight. |
| Expt 8 | Molar Volume of an Ideal Gas | Students confirm the Ideal Gas Law: under conditions of constant pressure and temperature, one mole of any gas will always occupy the same volume. Students produce hydrogen gas in sealed Erlenmeyer flasks by mixing zinc and hydrochloric acid. Gas syringes measure the volume of hydrogen gas produced. Students determine the number of moles of hydrogen produced based on the mass of hydrochloric acid, and then determine the molar volume of the hydrogen gas. They test if their measured molar volume of hydrogen gas is comparable to the value predicted by the Ideal Gas Law. |
| Expt 9 | Titration Tutorial | Students compare the volumes of two solutions - one of known concentration and one of unknown concentration - at the point of neutralization, in order to determine the unknown concentration. Students use a burette filled with a solution of known concentration, and a flask filled with a solution of unknown concentration and an indicator. At the equivalence point, they measure how much base has been depleted from the burette; this allows them to determine the exact volume of base needed to neutralize the acid. |
| Expt 10 | Chemical Reaction Types and Their Equations | Describe classes of chemical reactions. Observe chemical reactions for qualitative results. Write balanced equations for chemical reactions. Students set up chemical reactions, identify the resulting products and write a balanced chemical equation to represent each of those reactions. |

| 15-Apr | Exam on Expts 7-9 | Due Dates, Quizzes 4-6 on LNL |
| 16-Apr | Lab lecture on Expt 10 |

Exp 11. Independent Asprin Lab

Best Wishes!