Course Description and Prerequisites:

This course is designed to introduce the student to standard air quality instrumentation and the process in setting up and calibration of those instruments in order to build an air monitoring site. The course will begin with basic concepts and the general characteristics of instruments used. Time in this course will be spent mostly in the laboratory interspersed with formal lectures.

Since this course is a graduate course, it is expected that you will work independently on your portion of the project. While there will be some selected formal lectures, most of the course will incorporate a 'hands-on' approach where students and the instructor will work together in the lab. There will be considerable time spent in the lab outside of our regular meeting without the supervision of the instructor. You will have the opportunity to build the air quality laboratory for the department. It is the goal of this course for you to be able to walk into any air quality monitoring site after you graduate and be familiar with most instruments and data acquisition systems.

Learning objectives

1. To be able to describe basic air quality instrumentation technology.
2. To understand how to calibrate standard air quality instruments.
3. Understand data acquisition in air quality networks.

Optional references

While there is no textbook for this course, the book by Brock and Richardson, *Meteorological Measurement Systems*, Oxford Press, 2001 may provide some insight into instrumentation basics.
Assessment

Assessment is designed to determine how well students have achieved the goals of the learning objectives and thus form an important component to the course. Each student will be assessed from a combination of assignments and exams. There will be one quiz and a final presentation and report.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation 1</td>
<td>20%</td>
</tr>
<tr>
<td>Take Home Quiz</td>
<td>15%</td>
</tr>
<tr>
<td>Project Report</td>
<td>35%</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

**Grading Scale:** A +/- grading system will be used for final grades.

90-100 = A  
80-89 = B  
70-79 = C  
60-69 = D  
Below 60 = F

Outline and Topics to Cover

1) **Instrumentation Basics**
   - Performance characteristics
   - Instrument siting
   - Sampling techniques
   - Sampling errors
   - Drift
   - Precision and accuracy
   - Flow rates
   - Power supplies

2) **Calibrations and standards**
   - EPA Quality Assurance
   - Calibrations using gas standards

3) **Data acquisition systems**
   - RS-232 coms
   - Ethernet coms
   - Campbell Scientific
Writing and Plagiarism

Writing is an extremely important component to any subject knowledge as it communicates that knowledge to other people. Through the use of the internet, plagiarism has become an increasing problem on college campuses. Although it may seem amazing to you, some students believe that completing their homework requires scanning the internet (i.e. Google it), finding the answer and then cutting and pasting their answer into a word file with their name at the top. This is certainly not acceptable.

Plagiarism: When you assume credit for something that someone else has written, that is stealing at this University.

Academic integrity statement from Office of Student Conduct and Ethical Development:
“Your own commitment to learning, as evidenced by your enrollment at San José State University, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at http://sa.sjsu.edu/judicial_affairs/index.html.

Campus policy in compliance with the Americans with Disabilities Act:
If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability.