

Chem 351 Abbreviated Syllabus

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Course Goals. Chem 351 provides an introduction to how we can use mathematical techniques to extract useful information from data. As with any area of chemistry, the field of chemometrics is too broad to cover in a single semester; our *content-specific goals* are relatively modest; these are to:

- characterize and visualize data using descriptive statistics
- use basic statistical tools to make comparative decisions
- build predictive mathematical models to predict a response based one or more dependent variables
- enhance the quality of analytical signals
- find patterns in data

In addition to these content-specific goals, we also have several *growth-oriented goals* that are important to your development as a student in STEM; these are to...

- improve your skills at working with quantitative information
- increase your ability to think critically about abstract ideas
- understand the importance of well-planned experiments and the importance of collecting good data
- appreciate the rich amount of information hidden within data
- gain familiarity with using the software package R as a tool for processing and analyzing data

Working Toward Success in Chem 351. Whatever your background in chemistry, specifically, and in STEM, more generally, in addition to your usual commitments—attending class, completing assignments, and preparing for exams, to name a few items—commit yourself to...

- *focusing on growth-oriented goals as much as you focus on content-specific goals:* identify the new skills you are developing and the existing skills you are strengthening
- *participating in class:* take full advantage of our time together by being an active, engaged learner
- *collaborating with your classmates in class:* education is not a competition; you have much to learn from each other and to teach each other
- *reflecting every day, even if for just a few minutes, on your most recent class:* look for connections between a new concept and older concepts from earlier in the semester; or between this course and other courses you are taking or have completed
- *asking questions:* in-class and out-of-class; of yourself, of me, and of each other; to clarify uncertainty or to satisfy curiosity

Course Web-Site. Many useful materials, including a detailed syllabus, a daily class and a weekly lab schedule, copies of course and lab materials, and answer keys to worksheets, suggested problems, and exams, are available at the course's web site. The link to the site is:

<http://bit.ly/dpuchem351>