Chapter 0

Intro to Chem 309
Intro Part 1:
Chem 309 On-line Course Resources

- Canvas (the e-learning link on the SCC website)
- LibreText with Agenda
  - Video Lecture Outlines
  - Video Lectures
- Basic Knowledge Practice Quizzes

Canvas
A repository for some of the materials distributed in class.

- General Handouts
- Links to On-line Resources
- Supplemental Homework – Blank Copies
- Selected Answer Keys

Chem 309 is an in-person class with web-enhancement.
LibreText

- Chapters like a traditional text
- Interactive & Instructive Animations
- Chapter homework with solutions
- Agenda with assignments due for EACH class session

Links to Video Lecture Outlines
Links to Video Lectures

Basic Knowledge Practice Quizzes

Course Basic Knowledge needs to be memorized so that it can be applied to more difficult course concepts.
Intro Part 2: Underlying Basic Knowledge

Chemistry: the study of the universe and the changes it undergoes

Matter & Energy

*work: moving an object against an opposing force

Periodic Table

Chemical Symbols
Atoms are arranged according to their outermost elections.

Atoms are ___________________.

Some elements can lose electrons to become _____________.

Some elements can gain electrons to become _____________.

We indicate charge using the top, right corner of the symbol.

Repeating patterns of chemical reactivity created Group Names.
### Inorganic vs Organic Chemistry

Inorganic Chemistry

<table>
<thead>
<tr>
<th>Group IA</th>
<th>Group IIA</th>
<th>Group IIIA</th>
<th>Group IVA</th>
<th>Group VA</th>
<th>Group VIA</th>
<th>Group II B</th>
<th>Group IIIB</th>
<th>Group IIIC</th>
<th>Group IV A</th>
<th>Group VA</th>
<th>Group VII A</th>
<th>Group VII B</th>
<th>Group VIIIA</th>
<th>Group VII IB</th>
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<tbody>
<tr>
<td>H</td>
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<td>Li</td>
<td>Be</td>
<td>B</td>
<td>C</td>
<td>N</td>
<td>O</td>
<td>F</td>
<td>Cl</td>
<td>Br</td>
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Organic Chemistry

- Inorganic vs Organic Chemistry
- Intro Part 2: Underlying Basic Knowledge

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Intro Part 3: Intro to Matter & Measurement

We study Matter and Energy by making Measurements.

Measurements ALWAYS have some degree of uncertainty.

The uncertainty in a measurement depends on the _________________ & _________________ of the measuring device, as well as human errors and the variation between samples.

Precision

Accuracy

Exact Number:

Inexact Number:

Measurements:
Checking for understanding of Accuracy and Precision:

The accepted value of a distance is 27.2 m.

<table>
<thead>
<tr>
<th>Data Set A</th>
<th>Data Set B</th>
<th>Data Set C</th>
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</thead>
<tbody>
<tr>
<td>27 m</td>
<td>29.1 m</td>
<td>25.1 m</td>
</tr>
<tr>
<td>26 m</td>
<td>29.3 m</td>
<td>28.3 m</td>
</tr>
<tr>
<td>28 m</td>
<td>29.2 m</td>
<td>26.9 m</td>
</tr>
<tr>
<td>average</td>
<td>27 m</td>
<td>29.2 m</td>
</tr>
</tbody>
</table>

Which data set has greater precision?

Which data set has greater accuracy?

Units help us translate word problems into calculations.

What physical property is being measured – mass, volume or length?

a) 42 g

b) 75 mL

c) 21 cm³