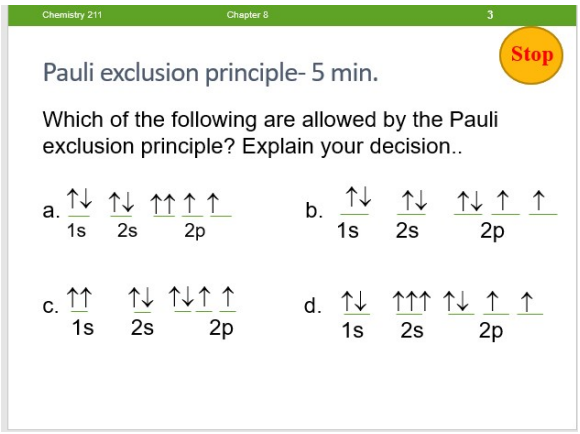
Flipped and Active Learning in Large Chemistry Lectures

Pritha Roy, Chemistry & Biochemistry

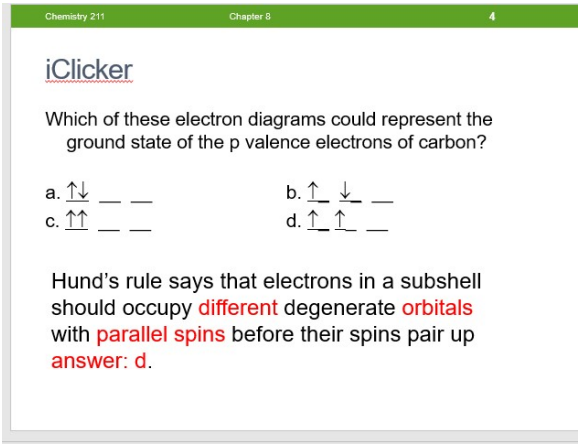
CHEM 211: General Chemistry I

General Chemistry I is a Mason Core course with over 100 students per section. Students are assigned to read the relevant chapter content before the lecture and complete initial homework problems that are due prior to the first lecture on that topic. In class, the first 30 minutes are spent on traditional lectures and clarifying any misconceptions the students may have based on questions from their reading. The other 45 minutes are spent on problem solving.



Students are engaged in solving problems on concepts that they are taught. The students work on the problems while my two undergraduate Learning Assistants and I walk around the room to see if they need help. There is a timer associated with the problem (dependent on the complexity). After the time is up, a random student is called upon to come up to the front of the class to answer and explain the problem.

Figure 1: Practice problem (courtesy Dr. J. Schreifels)



Once they have a chance to practice and ask any clarifying questions, students are given another similar problem to be answered via the iClicker platform. The iClicker answer is graded as a quiz. I provide solutions after the students have completed their attempts. After class, the students are assigned regular homework for more practice of the same topic.
These multiple types of assignment provide a lot of practice, which is essential in a subject like General Chemistry.

Figure 2: iClicker quiz question (courtesy Dr. J. Schreifels)