

Intro to Chemistry TAing

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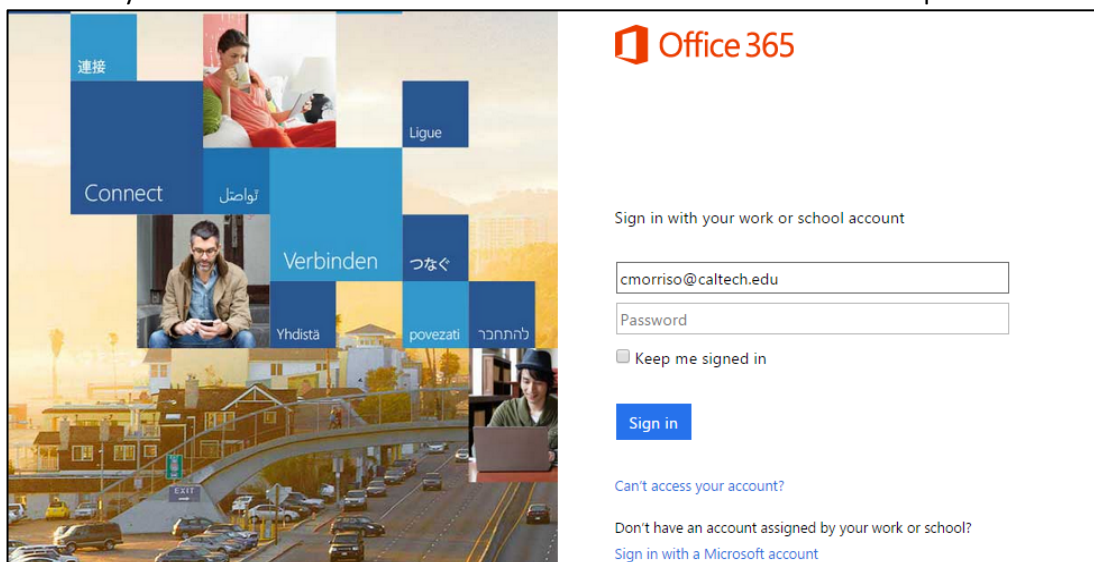
Objectives: Session participants will be able to...

- Navigate the SharePoint website for chemistry TAs
- Hear about creating useful student handouts, which are helpful in recitations
- Explore what it means to be an effective lab, recitation, and grader TA in chemistry classes with a panel of experienced Caltech TAs
- Ask any TA-related questions

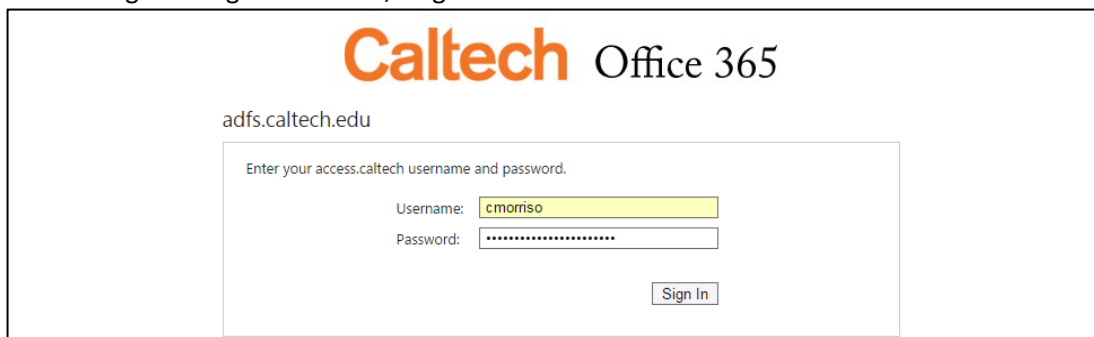
PART I: Chemistry TA SharePoint website

The chemistry TA SharePoint website provides a place to create, share, and archive documents and grades. To access this website, please do the following:

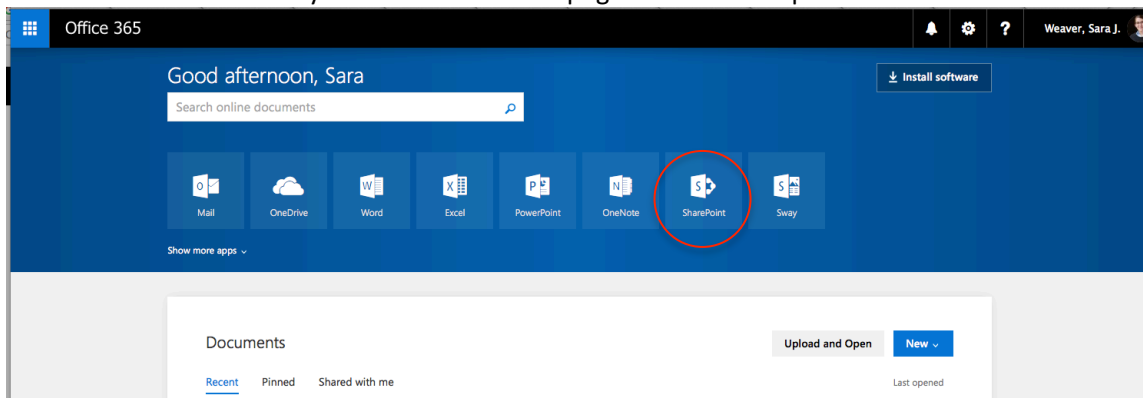
1. Go to <https://login.microsoftonline.com/login.srf?>
2. Enter your Caltech email address into the username field. Do not enter a password.



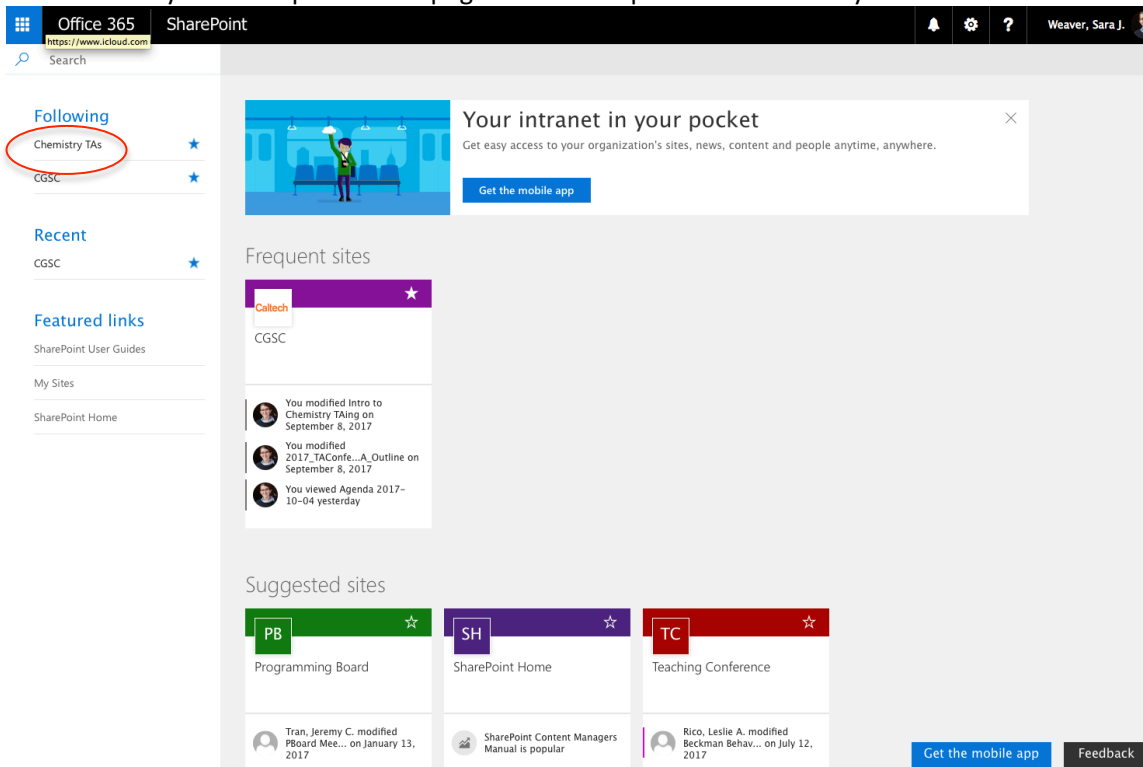
3. You will be redirected to a subsequent login page. Type in your Caltech username and password (the same ones used for Caltech Access). Click "Sign In". NOTE: They like to redesign the sign in method, so go with the flow.



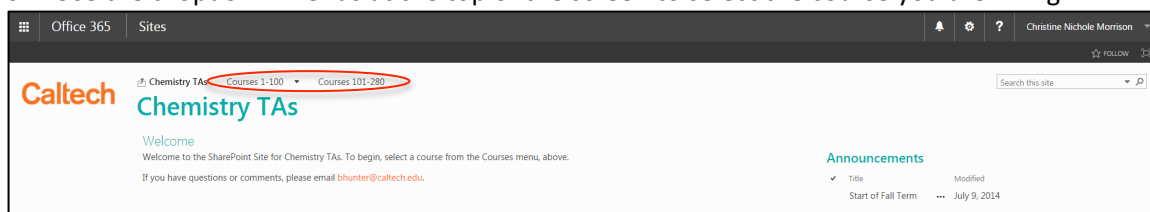
4. You should be at your Office 365 homepage. Select Sharepoint



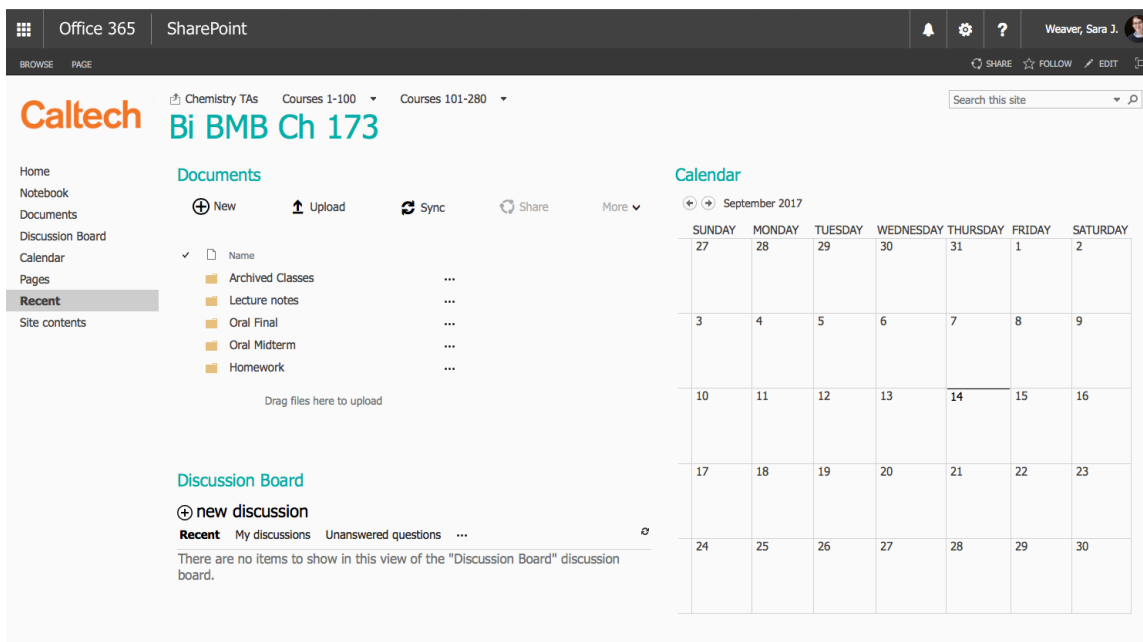
5. Next your sharepoint homepage will come up. Select Chemistry TAs.



6. Use the dropdown menus at the top of the screen to select the course you are TAing.



7. Here's an example of what a course page will look like



8. If the class you TA doesn't have one, you can talk to Jeremy about setting one up.

Questions or problems? Please email Jeremy Tran, jctran@caltech.edu.

Three ways that I can use the Chemistry TA SharePoint website to help me this year:

1. _____
2. _____
3. _____

PART II: Making handouts for your recitation or office hours

A “handout” is a document prepared by the TA and distributed to students. It includes explanations of concepts and example problems. Handouts are not required, but they are very helpful for a number of reasons. Some chemistry classes (for example, Ch1a and Ch1b) have handouts from previous TAs archived in the SharePoint site. Use them and add to them! ...and don't forget to upload yours to SharePoint.

Not giving a recitation? Making a handout or cheat sheet for each lecture or problem set can help you prepare for your office hours.

Why are handouts useful?

For students:

- An easy reference when doing homework and studying
- Pinpoints the most important or challenging concepts
- Shows that the TA is invested in their position as TA

For TAs:

- Aids in preparing for recitation or office hours
- Helps boost your confidence in recitation or office hours
- Shows the students that you are invested in your position as TA

Qualities of a good handout:

- States and briefly describes important concepts
- Draws attention to the most important points with font and/or style changes
- Does not include *everything* – you still want the students engaged with you and coming to class. For example, use fill-in-the-blanks for definitions and descriptions of concepts.
- Includes enough white space for students to add their own notes
- Includes practice problems
- Includes figures – don't forget to cite your sources!

See the example on the next page

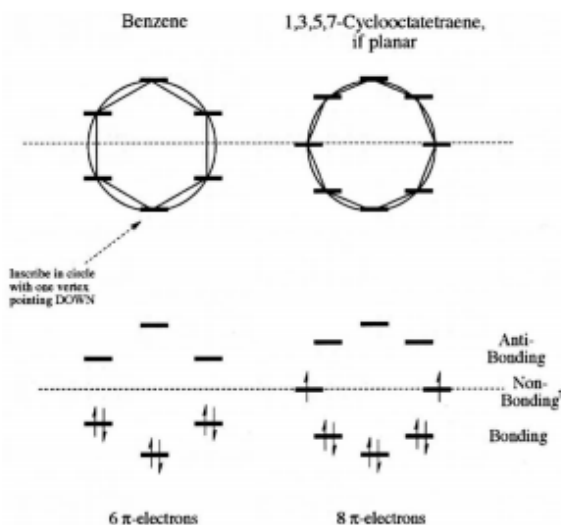
Example

Nodes in a pi system

- The sign of the orbitals always changes when _____
- More nodes = _____
- The final distribution of nodes must be either _____ or _____
- A node CAN be placed through an orbital or orbitals

Nodes in cyclic pi systems: Frost Circles

1. Draw the polygon with vertex pointing down. The polygon should have the same number of vertices as the number of atoms in the ring of the molecule.
2. Place horizontal lines at each vertex of the polygon to denote the positions of molecular orbitals. MOs that lie on the same horizontal line are degenerate.
3. Draw a line that divides the circle/polygon in half.
 - a. Orbitals below this line are bonding
 - b. Orbitals on this line are non-bonding
 - c. Orbitals above this line are anti-bonding
4. Fill in the available pi electrons
5. To draw the MOs, first consider the number of nodes. The bottom MO has no nodes. Each degenerate set of MOs above the bottom MO gains another node.



<http://chemistry.wiu.edu/WebPDF/242/241%202003/Frost'sCircle.pdf>

Nodes in linear pi systems

1. Decide how many rows you will have. You will have as many rows as there are atoms involved in the pi bonding. For example, 4 conjugated atoms means 4 orbitals and 4 rows.
2. Draw the orbitals in each row. Do not shade the orbitals yet.
3. Draw the nodes in each row as vertical lines on or between orbitals. The first (bottom) row has zero nodes. Each additional row has one more node than the previous. So, the second row has 1 node and the third row has 2 nodes. The last (top) row always has a node between every orbital.
4. Shade the orbitals such that orbitals between nodes are all the same phase. Orbitals with a node in between are opposite phase.

Space to work through an example of nodes in a linear pi system with students

Practice problems

1. For each of the following linear pi systems...
 - a. Give a line-bond sketch of the molecule
 - b. Indicate the hybridization at each individual carbon
 - c. Give a sketch of the pi orbitals
 - d. Indicate if the system is a continuous pi-bonding system

