

Proposal assignments (#5-6)**Research or teaching proposal?**

You should choose to write a research proposal if

- You are doing undergraduate research (required for BS Chemistry major), OR
- You are considering graduate school and/or a career in research.

You should choose to write a teaching proposal if

- You are most interested in pursuing a career that does not include research, AND
- You do not want to learn about ongoing research in one of the UMass labs.

The teaching version of this assignment is new this year. In making your choice you should consider the different challenges of these two assignments:

- Research proposal requires you to understand a research project sufficiently to write a clear proposal. We provide you with a clear organizational structure to follow.
- Teaching proposal requires more creativity and organization from you: you will be expected to produce a clearly organized and articulated proposal with less guidance regarding the format.

Research proposal: How do I affiliate with a research group & develop a proposal?

For projects 4-6 in "Writing in Chemistry" you get to choose an area of chemistry to learn and write about, by affiliating with a research group or taking advantage of an ongoing affiliation if you already have one. One of the major advantages of pursuing your education in a university setting is the number of opportunities you have to learn first-hand about research, which is very different from learning chemistry in a classroom or from a textbook. These assignments take advantage of this opportunity and also allow you to choose what area of chemistry you would like to learn more about by affiliating with a research group.

Step 1 - Join a research group for the semester (or longer) - by 9/30

Go online to learn about the ongoing research in Chemistry and related departments and find topics of interest to you. Send email to a faculty member expressing your interest in learning about their work as a topic to write about in this course. Explain that you would like to learn about their work through discussions, reading papers, and attending group meetings, so that you can then write a short research proposal about a new or ongoing project suitable for undergraduate research. You should also indicate whether you are interested in the possibility of actually doing the project you write about.

Step 2 - Learn about the research topics of the group

Ask the professor to recommend a couple of review articles to give you background information.

Read these and other articles, attend group meetings if you can, and talk to the students in the group about their research projects.

Step 3- Develop a proposal for an undergraduate research project

IMPORTANT You are not expected to develop the idea for your proposal independently. If you are working in the research group, write about the project you are working on or planning to work on. If you are not working in the group, you should ask the professor or graduate students for a small project to write about (something suitable for an undergraduate summer project), and guidance in developing a logical plan for the project (ie control experiments, etc). You could write about a project that relates to experiments someone is already doing or a project that they are hoping someone will do soon. Develop your plans and ideas for the project by reading papers relevant to the project and discussing strategies with the professor and other group members. Your project must be distinct from any other in the class.

Start serious work on this by the beginning of October: the various elements of the written (#5) and oral (#6) research proposal assignments are due beginning 10/23 with your Specific Aim and Outline.

Teaching proposal:

The goal of your proposal is to persuade someone that you have a compelling approach to teaching one or a few chemistry concepts. You'll need to explain how your approach makes the material especially exciting to the students (the hook) as well as how you will make the concepts clear (the science content). You can use your own idea for a hook - a chemical topic in the news or a chemical angle of a movie or other popular media. You may get an idea for the "hook" from a publication (eg Journal of Chemical Education), but note that your proposal must be more than a summary of a single article. You may get an idea from a faculty member: talk to Jeanne Hardy if you are interested in developing content like this for a new chemistry course, based on forensic topics (using episodes of CSI) or other popular media.