

**CHEM 490 Senior Research Thesis
Research Contract**

Print

Student Name _____ Research Advisor _____

CHEM 490 is a two-semester commitment; the student is expected to spend, at a minimum, an average of five hours per week (~150 research hours). While the experience of summer research may be beneficial to the research, the hours of paid summer research can not be included. This contract more specifically outlines the expectations of CHEM 490 and the schedule to help meet these expectations. The research advisor and student need to review this document together, clearly making changes to the schedule as needed.

Research **50%**

Research can take many different forms. Students are expected to develop mastery of skills/techniques/methods used for the research project, and to display safe laboratory conduct. Students will demonstrate engagement with the research process by showing consistent effort, and through regular meetings/discussion with the research advisor. Students will achieve an increased level of independence over the course of the project, and participate in the planning/design of the project in addition to the execution of procedures.

Safety Training _____ initials of safety officer _____ date

Students are expected to understand and practice safe lab protocols whether they are participating in theoretical or experimental research. Students enrolled in CHEM 490 are required to attend and complete the University of Puget Sound general training session prior to conducting research.

Each research experience has different standard operating procedures (SOP) or training. The research advisor will initial the SOP that are required for you to review in order to work in their laboratory.

_____ Gas cylinder use	_____ Steam Autoclaves	_____ Review of SDS
_____ Waste designation	_____ Use of base bath	_____ Training (specify)
_____ Waste disposal	_____ Use of glovebox	
_____ Handling of cryogenic fluid	_____ Use of schlenk line	
_____ Working with organic and inorganic acids		

Written work (each category requires timeliness, effort, quality, etc.) **40%**

Objectives: due 9/4/2018 received date _____

Research objectives will be established via discussion between the research advisor and the research student and appended to the Research Agreement prior to registration for the CHEM 490 course.

Literature Review: due 9/28/2018 received date _____

At least ten articles will be reviewed and annotated. The annotated bibliography will describe the main findings and significance of the paper to the research and objectives.

Progress report: due 11/16/2018 received date _____

The progress report will be a written and/or oral presentation to the research advisor outlining the research progress accomplished over the first semester of research. It will entail creating figures illustrating results, and describing how the research objectives have been accomplished or attempted. The report will also outline anticipated efforts for the second semester of research

Draft of Introduction: due 2/1/2019 received date _____

This written assignment will incorporate background literature into a description of the project significance, hypothesis, and research plan. Feedback from the research advisor will be incorporated into subsequent drafts of the thesis.

Draft of Thesis: due 3/29/2019 received date _____

A (nearly) complete rough draft of the thesis, containing revised Introduction, Experimental, Results and Discussion. For style refer to available Lab Writing Guidelines and research advisor. Feedback on this draft will be incorporated into the oral presentation and the final draft of the thesis.

Thesis: due 5/8/2019 received date _____

One hard copy and a complete electronic copy of thesis including department cover page

Housekeeping: due 5/17/2019 received date _____

At the completion of CHEM 490, the student will clean up their assigned work space, return their keys to Security, and return all research materials including notebooks, files, and spectra to the research advisor.

Presentation **10%**

Friday, April 19 and 26, 2019

An oral presentation at the Chemistry thesis symposium. The scope and content of the presentation will be agreed upon between the student and the research advisor prior to giving the presentation. Evaluation by chemistry students and faculty will be based on clarity of the presentation and ability to address questions.

Please note and initial any changes to the schedule in this document. Signatures certify that the research student and the research advisor met and discussed the responsibilities and the time commitment associated with research.

Student Signature _____ **Date** _____

Research Advisor _____ **Date** _____

Please return the signed contract to the Chemistry office by September 4, 2018 (copies will be made for the student and the research advisor). Student is to use the ADD/DROP form to register for CHEM 490.