Department of Chemistry – Yale University

CHEM 480 Registration Form (Pass/Fail Grading)

CHEM 480 Student Responsibilities:

A student conducting independent research in CHEM 480 must agree to the following:

- To devote at least 10hrs per week to research efforts in the laboratory of my mentor.
- To have a basic proficiency in aspects of chemistry required for my planned activities.
- To fulfill basic safety requirements, including completion of all pertinent training.
- To submit (by end of classes) a final report describing research goals & accomplishments.

By signing below, the student affirms they have read the extended description of CHEM 480 (attached document), and will abide by all stipulations and requirements listed therein:

Student Name:_____ SID:_____ College/Class:_____

Student Signature:_____ Date:_____

E-Mail Address:_____ Major/Degree:_____

Phone Number (optional):_____

Emergency Contact (name/phone):_____

Faculty Research Mentor (in Chemistry):_____

Title of Proposed Research:_____

CHEM 480 Faculty Research Mentor Responsibilities:

A mentor supervising independent research in CHEM 480 must agree to the following:

- To affirm by midterm that the student is devoting at least 10hrs per week to research.
- To ensure student meets basic safety requirements before starting laboratory work.
- To administer to student any specialized training required for planned research activities.
- To prepare a substantive report describing the nature of research undertaken by the student and evaluating their overall performance (required for all Yale Pass/Fail courses).

Faculty Mentor Name:_____

Faculty Mentor Signature:_____ Date:_____

Please list any rooms that the student needs key or card access to:_____

CHEM 480 Safety Certification:

Cognizant staff from Yale's Office of Environmental Health and Safety (EHS) or the DUS of Chemistry (upon consultation with EHS personnel) must affirm that the student has fulfilled basic safety requirements *prior to them engaging in any research activities*. This includes completion of online courses on laboratory chemical handling and hazardous waste disposal, as well as any other specialized training deemed necessary.

EHS Staff/DUS Name:_____

EHS Staff/DUS Signature:_____ Date:_____

Chem 480 Final Approval:

DUS Name:_____

DUS Signature:_____ Date:_____

CHEM 480: Introduction to Independent Research in Chemistry

The following information affords a more detailed description of CHEM 480, enumerating the basic criteria imposed for student enrollment and the formal requirements that must be met for participants to complete the course successfully.

Brief Description:

After consulting with the Director of Undergraduate Studies (DUS) in Chemistry *no later than the last week of the preceding academic term*, students engage individual experimental and/or theoretical problems in the laboratories of a selected faculty member in Chemistry. At least 10hrs per week of research is required (including initial time spent on requisite safety training), with the faculty mentor affirming this level of student commitment by midterm. A brief report summarizing goals, methods, and accomplishments must be submitted at the end of the term.

Individuals wishing to enroll must have demonstrated proficiency in the aspects of chemistry required for planned activities, as ascertained and certified by the supervising faculty member. For each term of enrollment, students must complete a CHEM 480 registration form, have it signed by their faculty research mentor, and submit it to Chemistry DUS for final approval *no later than the last week of classes in the immediately preceding academic term*. May be taken multiple times for Pass/Fail credit, subject to restrictions imposed by Yale College.

Course Overview:

The primary purpose of CHEM 480 is to provide undergraduate students with a hands-on exposure to basic research in the chemical sciences and a practical introduction to the modern research environment. The course entails one semester of experimental or theoretical work with a *minimum* of 10hrs per week being spent in the laboratories of a faculty member in Chemistry. Building on concepts and techniques honed during formal coursework, participants are expected to direct their efforts towards the generation of chemically relevant data designed to engage and address a specific research problem, as coordinated and supervised by their selected faculty mentor. A brief report summarizing accomplishments must be submitted at the end of the term.

Time Commitment:

Each student enrolled in CHEM 480 must fulfill a *minimum* of 10hrs per week of research, with the faculty mentor required to certify this level of participation by midterm. If for any reason an individual is unable to meet this commitment, they will be required to withdraw from the course immediately.

Students traveling to interview for summer/post-graduate positions or to engage in extracurricular activities must account for lost research time by undertaking additional laboratory work as agreed with and coordinated by their faculty mentor.

Safety Requirements:

Participants in CHEM 480 must fulfill basic safety requirements, including *at least* the online courses entitled “Laboratory Chemical Training” and “Hazardous Chemical Waste Training” as administered by the Yale Office of Environmental Health and Safety (EHS) at http://ehs.yale.edu/training. Enrolled individuals must complete these courses successfully and receive formal certification from EHS *prior to beginning any laboratory activities*. Depending on the nature of specific efforts undertaken by the

student, additional safety courses or other training requirements might be imposed by the faculty mentor and/or EHS personnel. The time expended to comply with such safety/training prerequisites can offset the mandated 10hrs per week of research.

Ethical Conduct:

Plagiarism and other forms of academic/professional dishonesty are antithetical to science, which critically depends on the integrity and ethical conduct of its participants to ensure the successful advancement of scientific knowledge and understanding. Students wishing to enroll in CHEM 480 should review Yale College policies regarding undergraduate plagiarism and cheating carefully (http://yalecollege.yale.edu/campus-life/undergraduate-regulations), as well as science-specific regulations composed by Yale's Office of Research Administration to govern the responsible conduct of research (http://researchadministration.yale.edu/responsible-conduct-research).

Grading:

Students enrolled in CHEM 480 earn one (1) graduation credit upon successful completion of the semester and are graded on a Pass/Fail basis. In addition, the faculty mentor must submit a substantive report that describes the nature of research endeavors undertaken by the student and explicitly evaluates her/his overall performance. These documents will be shared with the student and the Director of Undergraduate Studies (DUS) for Chemistry, with a permanent record being kept in the office of the student's Residential College Dean. CHEM 480 may be taken multiple times for Pass/Fail credit, subject to restrictions imposed by Yale College.

Enrollment Procedures and Formal Requirements:

It is expected that individuals wishing to perform independent research will have demonstrated proficiency in the basic aspects of chemistry required for their planned activities, as ascertained and certified by the supervising faculty member. For each term of enrollment, students must complete a CHEM 480 registration form, have it signed by their faculty research mentor, and submit it to Chemistry DUS for final approval *no later than the last week of classes in the immediately preceding academic term*.

In addition to the explicit time commitment of at least 10hrs per week, a 2-3 page report (single-spaced, 12-point font, exclusive of figures, bibliography, and cover pages) must be submitted electronically (to chemistry.dus@yale.edu) by the last day of classes for each term of CHEM 480. This document should include (1) a brief outline of goals and objectives, (2) a description of basic methodology and specific techniques, and (3) an enumeration of actual research progress and accomplishments. These materials will be reviewed by the faculty mentor and the Chemistry DUS, and will be taken into account for the issuing of a final grade and the granting of permission to enroll in subsequent semesters of independent research.