

Graduate Student Handbook

University of Washington Department of Chemical Engineering

This handbook collects information and rules affecting ChemE graduate students enrolled in the Doctoral Program (PhD). Content will be updated periodically and the version posted at https://www.cheme.washington.edu/graduate_students/PhD_handbook.html represents the current Departmental rules and procedures that are in effect and must be satisfied. In case of any conflicts or change to University of Washington Graduate School policies and procedures, those take precedence over Departmental procedures outlined here. In addition, individual research groups may have additional procedures, requirements, and expectations. Those may go beyond the requirements articulated in this document, but this document takes precedence if contradictions exist. Consult with your Research Advisor for any research group specific requirements.

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I. Orientation (Getting Started at UW ChemE)

A. Staff and Facilities Overview

Most of the Chemical Engineering graduate students, facilities, staff, and faculty are in Benson Hall (abbreviated BNS). However, some research groups have offices and/or labs that are located outside Benson. In particular, Profs. Carothers and Hillhouse are located in the Molecular Engineering and Sciences Building (officially abbreviated MOL, colloquially referred to as MoLES). Some of the key locations and facilities are:

Assistance & Supplies	Room
● Main ChemE office (Andrea Gleichweith, Nicole Devine)	105
● ChemE Grad Program Advisor, GPA (Allison Sherrill)	137B
● ChemE Grad Program Coordinator, GPC (Prof. Cole DeForest)	353
● ChemE Business Office (Debbie Carnes, Katia Jossa-Jouable)	105
● Computing and Technology Manager (Jesse Chiem)	105
● ChemE Chair (Prof. Jim Pfaendtner)	107
● Copy Machine & Mailroom	101
Shared Labs	
● Graduate student computer lab	356
● Undergraduate computer lab	125
● Shared Instrumentation Facility (SIF)	121
● Colloids Laboratory	123
Shops & Services	
● Instrumentation shop	B49
● Computer support (Jesse Chiem)	105

B. Graduate Program Advisor and Coordinator (GPA and GPC)

The ChemE *Graduate Program Advisor* (GPA) is Allison Sherrill.¹ The GPA's responsibilities include:

- Advising and assisting graduate students to help them successfully satisfy the Program and Degree requirements
- Assisting graduate students with course registration and submission of Graduate School forms.
- Handling Graduate Program administrative duties.
- Tracking graduate student progress through the program.
- Referring students to the GPC as needed.

The ChemE *Graduate Program Coordinator* (GPC) is Prof. Cole DeForest.² The GPC's responsibilities include:

- Advising first quarter graduate students on course selection.
- Advising first quarter graduate students on the research advisor selection process.
- Advising and assisting all graduate students on any topic that may not be appropriate to discuss with their primary Research Advisor.
- Advising all graduate students with regards to Teaching Experiences.
- Ensuring that all graduate students receive special attention as appropriate.
- Evaluating petitions and waivers to Departmental Graduate Program policies and procedures.
- Chairing the Graduate Program Committee. This is the committee that sets policy for the Graduate Programs (articulated in this document) and ensures that high academic standards are maintained.
- Chairing the Graduate Admissions committee. This is the committee that evaluates potential graduate students and selects recipients of recruiting fellowships.

C. Practical Advice for all Graduate Students

Below is a list of helpful advice and information on a wide range of topics. For additional information on UW graduate studies and details of related UW policies and procedures see the [UW Graduate School home page](#). Also, the [Graduate and Professional Student Senate \(GPSS\)](#) maintains a website with topics that concern all graduate students.

1. After Accepting the Offer of Admission

After you have officially accepted the offer of admission, you should go to the [Graduate School Application](#) page, enter your login information, and then click on the "Status" link under the "Action" heading. Follow the instructions to:

- Establish your UW NetID. This will be your email address at UW. Also, note and record your 7-digit UW Student ID number that is listed on this page. You will need this number to obtain your Student ID Card (also called a "Husky Card").
- Send official transcripts to the Graduate School
- Request a visa application (if necessary)
- Pay the enrollment confirmation deposit
- Access information on immunization requirements

¹ Office: Benson Hall Room 137B; Contact: (206) 685-9785, sherra@uw.edu

² Office: Benson Hall Room 353; Contact: (206) 616-8128, profcole@uw.edu

These steps should be completed as soon as possible and well ahead of your arrival on campus.

2. Finding a Place to Live

There are several options for housing close to campus. Some things to consider are the proximity to bus routes and proximity to the [Burke-Gilman Trail](#) if you plan to ride your bike or walk into campus, and proximity to grocery or other shopping. Some important resources include [UW Housing](#), which has specialized information and options for graduate students and families. Also, our current graduate students report the best success finding houses, apartments, or rooms for rent by using [Craig's List](#). Craig's List is most useful for finding housing from independent owners. [HotPads](#) also has a lot of listings including some apartment complexes.

Many students reduce housing costs by partnering with other students and renting a house or multiple bedroom apartments. Please contact the GPA for contact information of other UW ChemE graduate students looking for housing.

3. Getting to Campus and Parking

On-campus parking is limited and expensive. We strongly encourage graduate students to avoid driving a car to campus. Instead, walk, bicycle, or take advantage of the [U-PASS system](#), which provides low-cost public transportation. For details on parking and other commuting options see [UW Commuter Services website](#). Your U-PASS will be activated one week prior to the start of classes or after you obtain your Husky Card (see item 4 below), whichever is later. Also, there is an app written originally by a UW graduate student (he now works at Google), called "[One Bus Away](#)." In addition to having maps of the bus routes, it has up to date information on when buses can be expected to arrive and depart.

You can also consult [the King County Trip Planner](#) and Sound Transit's [Ride the Wave](#), which the state runs to help people determine which routes they need to make trips through mass transit. The [Puget Sound Trip Planner app](#) incorporates both of these websites' functions for use on a smart phone. Additional information on bus routes may be found at [King Country Metro's website](#). Further, there are excellent [bicycling routes](#) through the city including the [Burke-Gilman Trail](#).

If you must drive to campus, temporary parking (loading/unloading only) is available at Benson. Day parking permits may be purchased for \$15/day. However, if you carpool with another student who has a valid husky card; parking is \$450 a quarter – cost is split between the car pool members. Please check with [transportation services](#) to register a carpool. The closest garage is the Central Plaza Parking Garage. The main entrance is Gate 1 which is at the east side of the intersection of 15th Ave NE and NE 41st St. The parking permit may be purchased at the entrance booth. The Chemical Engineering building (Benson Hall) is just a 5-minute walk to the South of the Central Plaza Parking Garage.

4. Finding Your Way Around

A campus map is available at <http://www.washington.edu/home/maps/>. This may also conveniently be accessed from a smart phone. If you do not have a smartphone, you can pick up a free campus map from the booth at any campus entrance or from the staff in 105 Benson. The UW campus is relatively compact, and most all destinations are easily reached by a less than 15-minute walk.

5. Obtaining Your Student ID Card (Husky Card)

UW has a universal student ID card and account that is used to access a range of services on campus including dining, access to sports facilities, borrowing books at the library, building access, and public transportation around the Seattle area (U-PASS). It is called a [Husky Card](#) (see link for more information). After you arrive on campus, obtain your Husky Card as soon as possible. The main Husky Card office is in

the Odegaard Undergraduate Library on the ground floor (phone: 206-543-7222). The office is open Monday to Friday, 8am to 5pm. You will need to give them your UW student ID number and show proof of identity with an official photo ID.

6. University Computing Services (MyUW and Email)

The UW provides each student with an account for email and web-based services by assigning them a “UW NetID.” If you have not already obtained a UW NetID (see item 1 above), you can set one up by using a web-based form at <https://uwnetid.washington.edu/newid/>.

[MyUW](#) is the portal for a vast array of web-based resources. To access MyUW, you will first need a UW NetID (see above). Once you have entered your UW NetID, you have authenticated access to your employment information, pay checks, tax information, your library account, online research databases (such as Web-of-Science), online research journals, grades, UW software, etc.

Once you have your UW NetID, you may use your UW email address. Your address is *yourUWNetID@uw.edu*. Note that the following addresses are functionally identical to the address just mentioned: *yourUWNetID@u.washington.edu* and *yourUWNetID@washington.edu*. However, we ask that you use the @uw.edu alias. For more information regarding the UW email system, please visit the website at <http://www.washington.edu/itconnect/email/uwemail.html>. You can also have your UW email forwarded to another email address. Use the "Change Email Forwarding" option on the MyUW page.

The main access point for more information about computing resources is [UW IT Connect](#). The site also details UW computing policies and procedures. *You must be familiar with the policies on accepted computer usage*. If you violate the policy, you are subject to loss of computer privileges.

7. Software and Security

A vast array of software is available to UW graduate students that may be installed on your own personal computer and on University owned computers. The access point is [UWare](#), also accessible through IT Connect. Microsoft Office (*Word, PowerPoint, Excel*, etc.) may be installed for free along with computational software such as *Mathematica*.

Also, it is important to install anti-virus software immediately. UW provides [Sophos Anti-Virus software](#) free of charge to all students, faculty, and staff. It should be installed on all your computers. The virus definitions are updated regularly.

8. Departmental Email Communication

Electronic mail is the primary communication channel within the department. Please be sure that you check your UW email frequently. ChemE maintains email group listings for faculty, staff, and students (*e.g.*, all faculty or all ChemE graduate students), and you will receive regular emails with important information and notices.

9. Departmental Computing Resources

ChemE maintains computers for grad student use in room BNS 356. BNS 356 has a printer, which you can use by loading money on your department account (charges are per printed page). Check with the front office on how to set up printing. Undergraduate students have priority for the computers in BNS 125. Grad students wanting to work there should consult ChemE computer support. ACES (Association of Chemical Engineering Students) maintains the grad computer lab (including paper supplies). If you see a problem, for instance, the printers are out of paper, etc., notify the appropriate ACES representative. The Computing and Technology Manager (jchiem@uw.edu) in charge of these rooms and computing resources generally.

10. Keys and Building Security

Benson Hall keys are issued by the Chemical Engineering Business Office (BNS 105) and require a \$50 deposit. For security and safety, close and lock all doors when a room is not in use. Be careful not to leave valuables in view. If possible, store them in a locked desk or cabinet. Campus buildings are typically open to the public from 7am to 7pm, Monday through Friday. If you are in Benson, Benjamin, or MoES at other times, please do not admit anyone unless you know they are authorized (carrying a faculty or staff ID or a valid Building Use Permit)

A Building Use Permit is a small orange card given to you by the Chemical Engineering Business Office when you receive your keys. Any student using a building after hours should carry a Building Use Permit. Faculty and staff members should carry their staff cards, which will be considered the equivalent of a valid Building Use Permit. Permits may restrict access of individuals to specific areas of the building if the person authorizing the permit so requests. Access to Benjamin and MoES are controlled by authorized Husky Card access.

Report all suspicious persons or activities to the ChemE Business Office or the UW police (dial 911). Please see the official [UW Building Security Regulations](#) for more information.

11. Desk Space

New graduates in need of space may request a temporary desk at any time through the department, which will be available on a first-come-first-serve basis. After you have chosen your research project, your advisor will supply you with permanent desk space near their lab while you are at the UW. Once you receive a desk assignment. Note that a \$50 deposit is required for desks as well.

12. Phones

For on-campus calls (campus telephone numbers are 543-xxxx, 685-xxxx, 616-xxxx, and 221-xxxx), dial the last five digits. For example, the ChemE main office phone number is (206) 543-2250. From on-campus dial 3-2250.

For local calls outside the UW, dial a 9 to get an outside line (you should hear a dial tone). Then dial the local area code and the seven-digit number. See a local telephone directory for more information on the local calling area.

To use a campus phone for long distance calls (including international calls) on official UW business you need an authorization code. See your advisor for this. To make the call, first dial 77. You should get a new dial tone. Then dial the number (starting with a 1 and the area code for domestic calls). You will hear a “beep.” Then dial the seven-digit authorization code. ***Do not share your authorization code with others for any reason. Your advisor will receive a record of all calls made using the authorization code. NOTE: Some campus phones are restricted to on-campus calls only. If you are trying to dial off-campus but it isn't working, that is probably the reason.***

You may use campus phones for occasional personal calls. You must charge personal long-distance calls to your own credit card, however. There is no way for you to reimburse the UW for personal long-distance charges.

13. Fax

UW uses a digital fax service. If you need to send a Fax message, visit <https://fax.uw.edu>.

14. Sending and Receiving USPS Mail, Packages, and Equipment

Mail pickup and delivery occurs once a day at 9 am. Grad student mailboxes are in the mailroom, BNS 101. Mailboxes are *not secure*. Also, it's often necessary for a mailbox to be shared by two grad students.

Your address for normal U.S. Postal Service mail is:

(Your Name)
University of Washington
Department of Chemical Engineering
Box 351750
Seattle, WA 98195-1750

For deliveries to your laboratory or deliveries that require a street address and perhaps a phone number, please have items sent to:

Benson Hall (Express mail, FedEx, DHL, small packages, etc.):

(Your Name or Research Group Name)
Department of Chemical Engineering
University of Washington
Benson Hall, Room 105
4000 15th Ave NE
Seattle, WA 98195-1750
Phone: (206) 543-2250

Benson Hall (large packages or equipment):

(Your Name or Research Group Name)
Department of Chemical Engineering
University of Washington
Benson Hall, Room B37 (or specify your lab #)
4000 15th Ave NE
Seattle, WA 98195
Phone: (206) xxx-xxxx (specify your phone or lab phone number)

Benjamin D. Hall Building:

(Your Name or Research Group Name)
Benjamin Hall Interdisciplinary Research Building
Lab Suite # (specify the room or lab number)
616 NE North Lake Place
Seattle, WA 98105
Phone: (206) xxx-xxxx (specify your lab number)

Note: Building Coordinator is Tom Ward, (206) 543-9594

Molecular Engineering and Sciences Building:

(Your Name or Research Group Name)
University of Washington

Molecular Engineering & Sciences Building, Room # (Specify your room or lab room #)
4000 15th Ave NE
Seattle, WA 98195

Note: Contact the Building Coordinator at MolES@uw.edu

To send mail (official UW business only), bring it to the mail room and put it in the appropriate bin (these are marked “Campus,” “Stamped,” and “Budget Number”). Instructions for sending each of these types of mail follow.

On-Campus Mail: The UW uses a box numbering system (6 digits, Box 35_ _ _ _). The ChemE box number is 351750. To send mail to another *on-campus location*, write the recipient’s name and box number on the outside of the envelope (if recycling a used envelope, cross off any old addresses) and place in the outgoing campus mailbox. Used envelopes in good condition may be recycled (large envelopes are particularly valuable). Collect them for sending your own on-campus messages. Deliver any excess accumulation to the BNS 105 staff.

Off-Campus Mail: Regular mail going off-campus requires a barcode with budget number affixed in the upper left-hand corner of the envelope, just below the return address. The ChemE department uses UPS for most express mail. Air bills, mailing envelopes, and other assistance are available from the support staff in BNS 105. All express mail requires a budget number, either a department budget or a research grant budget. The staff will also instruct you on mailing packages.

NOTE: *It’s fine to receive personal mail in your departmental mailbox, but UW policy prohibits use of Departmental facilities for outgoing personal mail. Stamps may be purchased in the Husky Union Building branch of the University Bookstore. The closest post office dropbox (“blue box”) is located just north of the MoLES building, between Gerberding and Meany Hall. The closest U.S. Post Office station is on University Way and 42nd.*

15. Getting Your Paycheck

Before you are eligible to receive your appointment as a research assistant and be added to payroll, incoming PhD students must complete the National Science Foundation (NSF) training. Once training is complete, send the completion report to the GPA (Allison Sherrill). Delays in completion of the training beyond the standard start date of your first RA appointment will result in a loss of pay. There are no exceptions to this requirement.

There are two pay periods per month (1st-15th and 16th-30th/31st). Paydays are on the 10th and 25th of each month. If payday falls on a Saturday, you will receive your check the prior Friday. If payday falls on a Sunday, you will receive your check the following Monday.

Individuals who start employment between the 1st and 15th of the month will receive their first paycheck on the 25th. Those who start between the 16th and the end of the month will receive their first paycheck on the 10th of the following month. You should sign up for direct deposit to ensure you receive your paycheck. To do so, please sign into [Workday](#) and then use the "Pay/payment elections" portal to input the necessary information.

16. Health Care and Insurance

Hall Health: Hall Health Primary Care Center (located on Stevens Way across from the Husky Union Building or “HUB”) is an outpatient clinic that provides health and medical care to currently enrolled

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students and their dependents. Services include preventive care, health education services, diagnosis and treatment of illness or injury, and mental health care, including individual and group therapy. The pharmacy fills prescriptions and provides over-the-counter drugs, contraceptives and other products at reasonable costs. Appointments are recommended. For more information call (206) 685-1011 or browse <https://wellbeing.uw.edu/unit/hall-health/>

Insurance: The ChemE Department provides health insurance for most doctoral students. Others (e.g., those not receiving ChemE financial support) may purchase UW Student Health Insurance at reasonable rates and are strongly urged to do so. If unsure whether or not you are being covered, contact the ChemE Administrator (Debbie Carnes). The GAIP [website](#) provides details on the health insurance provided to Academic Student Employees (ASEs) and can help with the self-pay option should it ever be necessary.

17. Student Organizations (ACES, GPSS)

Associated Chemical Engineering Students (ACES) is a student-run organization formed to improve the education and enjoyment of ChemE grad students. ACES deals with a variety of events and communication. For example, ACES runs the annual Graduate Student Symposium, conducts educational outreach and serves as a medium for exchange between faculty and the student body, among other functions. The current organizational positions are President, Treasurer, Professional Development Chair, Outreach Chair, Graduate Student Symposium Chair(s), M.S. Student Representative, Graduate and Professional Student Senate Representative, Webmaster and Social Media Chair and Social Chair. To get involved, please contact the GPA for the names of current officers.

The *Graduate and Professional Student Senate (GPSS)* represents all UW graduate students – both on campus and in the Washington State Legislature. In addition, GPSS acts as a resource center to fund graduate programming and departmental resources.

18. Departmental vs. Personal Expenses

A common point of confusion is the distinction between departmental and personal expenses³. As a general rule, graduate students must supply (and pay for) all materials required for their personal education. This includes, for example, textbooks, writing materials, photocopying, and printing (as needed for thesis/dissertation preparation, courses taken by the student or in exams required for the degree) and personal computer software and hardware⁴.

On the other hand, expenses related to your research should be charged to a UW research account. These expenses include materials and supplies used directly in the lab, long-distance telephone calls when ordering lab supplies, photocopies of journal articles needed as research background, technical services (shop, literature searching), and research-related travel. All expenses related to research must have approval of the person in charge of that account, typically your research advisor. Some faculty members pre-approve students to spend up to a certain amount while others choose to approve purchases as they come up.

When you are helping with course instruction during one of your Teaching Experiences, charges for instructional photocopies and supplies should be charged to the appropriate departmental budget⁵. If it is not clear where something should be charged, ask the course instructor, your research advisor, or the ChemE Business Office.

³ Departmental expenses are paid from research and instructional budgets. Personal expenses are paid from student's personal funds.

⁴ The ChemE department provides access to computers with pre-installed software. Many graduate students find it convenient to supplement this with their own personal computer system, at their own expense.

⁵ If in doubt about the budget number for a ChemE course, ask the BNS 105 staff.

19. Purchasing Guidelines and Procedures

There are 4 methods for making purchases. They are listed below in order of recommended use along with instructions for each:

1. [Ariba](#) (UW eProcurement System): This is a web-based ordering system for orders from frequent suppliers that have a contract with UW. It is the preferred method of placing an order. Please check the [list of suppliers](#) to verify that the vendor is in the system. If so, you can place orders yourself through Ariba. Once you know the budget number that the purchase is to be charged to (consult your advisor), simply follow the [link to the eProcurement page](#), click on “Create Order” on the left, and fill in the required information. If you need help, you can visit the business office for a tutorial or ask one of your peers to help you get started. Once you place an order via Ariba, a notification will be sent to the department Administrator to approve. If the order requires approval (see Approvals below), you must obtain either an electronic email approval or add the faculty’s name to the approval chain in Ariba.
2. [Departmental Credit Card](#) (UW Procurement Card): This is a purchase made via a departmental Visa credit card (ProCard). This is the recommended option for small dollar items that are not available in Ariba. There is a limit of \$3500 unless special approval is obtained. If possible, obtain a quote from the vendor that includes the item number, unit cost, quantity, and total cost. Note: Always request an educational discount. Most vendors will provide a 5% to 15% educational discount, particularly for large-dollar items. Next, please submit and [online purchasing form](#). Use the “Additional Notes” section of the form to refer to the quote and to indicate the Tag Number if the item is part of a piece of capital equipment that you are fabricating (see Capital Equipment below). After hitting the submit button on the form, a summary of what you submitted will appear. Please copy and paste this into an email and send to your advisor for approval if necessary (see Approvals below). Once submitted, the order auto generates an email to the designated staff handling purchasing (the person handling this tends to turn over, but the email always stays the same: cefiscal@uw.edu). Forward the email approval from your advisor to cefiscal. Once it is received, the staff person will contact the vendor to place the order. They will then notify you once the order has been placed with confirmation and shipping information (if provided). Once the order arrives, the front desk will notify you. Please check the packing slip to ensure all items are received. If so, mark the packing slip “Received” with the date and return to the purchasing staff person’s inbox marked “packing slips.”
3. [Purchase Order](#): (UW Payments & Accounts System): For large-dollar purchases or when a signed purchase order or contract is needed. If possible, please obtain a quote from the vendor that includes the item number, unit cost, quantity, and total cost. Note: Always request an educational discount. Most vendors will provide a 5% to 15% educational discount on large-dollar items. Next, submit [online purchasing form](#). Use the “Additional Notes” section of the form to refer to the quote and to indicate the Tag Number if the item is part of a piece of capital equipment that you are fabricating (see Capital Equipment below). After hitting the submit button on the form, a summary of what you submitted will appear. Please copy and paste this into an email and send to your advisor for approval if necessary (see Approvals below). Once submitted, the order auto generates an email to the designated staff handling ordering (cefiscal@uw.edu). Forward the email approval from your advisor to cefiscal and plus any sales tax exemption or sole source statements if applicable (see details on each below). Once the staff receives the documents they will contact the vendor to place the order. They will then notify you once the order has been placed with confirmation and shipping information (if provided). Once the order arrives, the front desk will notify you. Please check the packing slip to ensure all items are received. If so, mark the packing slip “Received” with the date and return to the front desk inbox marked “packing slips.”
4. [Reimbursement](#): For small items, travel, or things needed from local vendors, students may purchase the item themselves and then request reimbursement. Please provide the staff person in charge of purchasing with the receipts on a piece of paper with the nature of the expense and the budget number

along with approval from your advisor if necessary. You will then be given a Check Request form to sign or receive an email from the e-reimbursement system to approve. A check will be delivered to the department once the Accounts Payables office processes it or if you have direct deposit the funds will appear in your bank account. If being reimbursed from a general department budget (not your advisor's research budget), you do not need to get pre-approval from your faculty advisor.

Approvals: You must obtain approval (email is fine) from your advisor for all substantial purchases unless: (1) you are in the Baneyx, Jenekhe, or Schwartz groups AND the cost is less than \$250, (2) you are in the DeForest group AND the cost is less than \$500, or (3) you are in the Adler or Carothers groups AND the cost is less than \$1000.

Sales Tax Exemption: Some research equipment may qualify for a sales tax exemption. In order to qualify, the purchase equipment must: (1) Have a useful life of more than one year, (2) Be used more than 50% annually on qualifying research; and (3) Have an acquisition cost of \$1,000 or more. You must provide a statement attesting that these three criteria are met. In most cases, for item 2 above, it will suffice to state the main goal of the research project incurring the cost of the order (i.e., develop solar cells to reduce energy costs). Note: we cannot request tax exemption on credit card orders. Please email this statement cefiscal@uw.edu after submitting the online purchasing form.

Capital Equipment and Fabrication of Capital Equipment: Equipment that costs at least \$2,000 may be designated as "capital equipment." Doing so is highly advantageous since capital equipment does not get charged UW overhead, which is an additional ~54% charge. For example, a \$1,999 piece of equipment will cost a grant \$3,078 (\$1,999 x 154%). However, a \$2,000 piece of equipment will cost the grant \$2,000. An additional requirement is that the piece of equipment must be tagged by UW as an asset. If you are receiving such an item, fiscal staff will contact you to get the appropriate information to enter into the Asset Database and provide you a sticker to affix to the equipment. If you are *fabricating a piece of equipment* (e.g., buying several less expensive components and assembling them to form a single instrument where the sum of the components is at least \$2,000), the individual components can be purchased without the overhead charge. You should first request a Tag Number from the fiscal staff and include the Tag Number and a statement in the Addition Notes section on the online purchase request form that the items on the purchase request are part of the piece of capital equipment.

Sole Source Justification: If a purchase exceeds \$10,000 and there is not a contract in place with UW, we must include a "sole source justification" that explains why we are using the certain vendor. A "Sole Source" purchase means that only one supplier (source), to the best of the requester's knowledge and belief, based upon thorough research (i.e., conducting a market survey), is capable of delivering the required product or service. Similar types of goods and services may exist, but only one supplier, for reasons of expertise, and/or standardization, quality, compatibility with existing equipment, specifications, or availability, is the only source that is acceptable to meet a specific need. Often it is because they are the only vendor who carries the item or have proven to be the most efficient in processing. You may consult with the business office for assistance with crafting this statement. It should be emailed to cefiscal@uw.edu after submitting the online purchasing form. Note: a quote is also required if the order is more than \$10,000.

For all the gory details on the ordering process at UW, check out Purchasing's web site: <http://f2.washington.edu/fm/ps/how-to-buy>

20. Supplies and Equipment

General office supplies (e.g., pens, paper clips, mailing supplies, transparencies) in BNS 105 and 303 are for faculty/staff use only. Blank paper stored in BNS 105 is for office staff only, not for use in student laser printers, etc. Printer paper supplies are a student responsibility and generally managed by ACES. ACES

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maintains the grad computer lab. In a pinch, an ACES representative may ask the office to loan a ream of paper, which must then be returned ASAP because the two sources are from different inventories. For inexpensive, miscellaneous items purchased *off-campus* with your personal funds, you may apply for reimbursement. The total reimbursement must be less than \$200. Make sure you get a receipt for all purchases.

Laboratory/office supplies: Many are available *on-campus* from *Chemistry Stores* in Bagley Hall or *University Stores*.

- TEs purchasing instructional supplies from Chemistry Stores should use the name of the course instructor when making the purchase.
- RAs purchasing research supplies from Chemistry Stores should first obtain a budget number from their research advisor, then apply for a budget-specific charge card in the Chemistry Stores office.
- Place orders for University Stores items using a Stores Order Form, available from the ChemE Business Office.

Bottled compressed gases: Most common gases (O₂, N₂, H₂, *etc.*) are available through Praxair. To order, use Ariba (UW's eProcurement system described above in the section on purchasing). The vendor will deliver your cylinder to the cylinder storage dock (for Benson labs) and will deliver directly to your lab in the Molecular Engineering building or Benjamin Hall. At Benson, you will find the cylinder temporarily stored in the special locker on the outside wall (inspect the tags to find yours – do not remove a cylinder unless you know it's yours). **THIS IS NOT A STORAGE AREA.** You must move your cylinder to your lab as soon as possible after delivery. Obtain the key from Caroline Armstrong or Debbie Carnes (BNS 105). When the cylinder is empty or you are finished with it, cap it, position the tag to label the cylinder as “empty,” bring it back to the loading dock, and secure it. Praxair picks up the empties on a weekly basis.

Surplus Equipment: The UW [Surplus Property Office](#) maintains an inventory of equipment that is no longer needed by the original purchaser. Check it before making an outside purchase. You might find the item you need at low cost.

21. Machine, Instrumentation, and Glass Shops

Chemical Engineering Instrumentation Shop: The research Engineer supervises the Instrumentation Shop in BNS B49. It supports undergraduate instructional laboratories, graduate research, and undergraduate research (in that priority order). Rules on student access are: (1) You must obtain permission from the research engineer before using the shop or any of its equipment and (2) The research engineer must be present at all times while you are working in the shop. The research engineer may be able to help with some items or give additional guidance.

Physics Machine Shop: The Physics Machine Shop specializes in the manufacture of experimental apparatuses. The shop is fully equipped to handle most machining, inspection, fabrication, and assembly tasks. They have extensive experience machining all conventional materials, exotic alloys, rare-earth metals, plastics, composites, and some ceramics. Contact: Bob Scott, Instrument Shop Manager, bjs24@uw.edu, 206-685-4266

Physics Glass Shop: The Physics Glass Shop is fully equipped to fabricate and repair research or instructional glassware. The Glass Blower, Eric Lindahl, works on a part time basis. For scheduling work when Eric is not available, or for any other shop inquiries, contact the Physics Shop Manager at: (206) 685-4266.

Chemistry Machine Shop: The Chemistry Machine Shop is located in Bagley Hall 82A and supports both research and graduate teaching activities. Staff members are highly skilled in design, development, construction, repair, and maintenance of scientific apparatus and instrumentation. The shop staff has extensive experience working with conventional materials, exotic alloys, plastics, and machinable ceramics. Ultra-high vacuum welding and soldering capabilities are also available along with a wide variety of woodworking and general assistance tasks. A student accessible portion of the shop (Bagley 82) is on a first come first serve basis. Machine tools, hand tools, and materials are provided for normal repair work or construction of research equipment.

Chemistry Electronics Shop: The Electronics Shop (Bagley Hall room 74) supports graduate teaching activities and research. The staff are skilled in design, development, construction, repair and maintenance of scientific apparatus and instrumentation. A supervisor is available to discuss apparatus design requirements as well as possible solutions to instrumentation repair.

22. Analytical and Fabrication User Facilities

Chemical Engineering Shared Instrumentation Facility (SIF): The first floor in Benson Hall houses a shared instrumentation facility (SIF) located in room 121 that is available for use by all graduate and undergraduate students in the Department of Chemical Engineering. The facility houses several advanced instruments for analysis of thermodynamic (TGA, DSC, calorimetry), spectroscopic (fluorimetry), structural (DLS, SAXS, GISAXS), and mechanical properties (rheometry) of materials; for performing analytical separations (HPLC and CGE) of complex mixtures; and for micro fabrication (3D printer and laser cutter). In order to gain access to instrumentation in the facility, students first have to be trained. The contact person responsible for training and access is listed on the placard outside room 121. The following rules must always be followed when using the SIF:

- Instrument time must be reserved in advance, using online calendars. Cancellations should be done in advance in order to allow others to use that time.
- ChemE courses have scheduling priority over individuals using instruments for research due to their time constraints.
- Instrument access is restricted. Proper completion of training is required.
- Trained users must log into each instrument using their own individual UW NetIDs. Never use the UW NetID of a fellow student or colleague.
- Users must also log their time and any instrument observations (including any unexpected problems encountered) in the physical logbooks associated to each instrument.
- No samples or chemicals can be stored in any SIF facility without prior written approval of Lab Manager.
- Many standard consumables are provided by the SIF, however special consumables or attachments must be purchased by the individual user.
- Tools, manuals, software and any other materials stored in the SIF must never leave that room.
- Problems with instrumentation must be immediately reported to the Lab Manager (listed on the door).
- General laboratory safety rules are posted inside the SIF and must be followed, including wearing appropriate laboratory clothing such as long pants, closed shoes and safety glasses.
- Inability or unwillingness to follow these rules will result in access restriction.

Note: the use of SIF instrumentation may sometimes carry associated charges to research groups. It is therefore important that students interested in using SIF instrumentation discuss this in advance with their advisor.

The Molecular Analysis Facility: The MAF is a staffed instrumentation facility located in the Molecular Engineering & Science building (MoES). Lab capabilities include microscopy, spectroscopy and surface science. For up-to-date details on the lab, its services, and other info, please see the website: <http://www.moes.washington.edu/maf/>

The UW NNIN Washington Nanofabrication Facility: The WNF is located in Fluke Hall and provides a wide range of deposition and microfabrication capabilities. Please see the lab's website for detailed and current information on its services and capabilities: <https://www.wnf.washington.edu/>

23. Lab Safety

The UW requires training for incoming students who will work in labs. The training covers general safety issues (Laboratory Fire Safety, Chemical Safety in the Laboratory, and Chemical Waste Disposal). It normally takes place in mid-September. The UW also requires that each lab train its users in all safety procedures relevant to that lab. The lab supervisor is responsible for making sure this happens.

The Department strongly urges you to be proactive regarding safety training. So, when you join a group, be sure to ask about safety training specific to the research group. In addition, UW EH&S has compiled a very nice resource page to provide safe work practices and procedures at <https://www.ehs.washington.edu/research-lab-safety>. Further, The Dow Chemical Company has created and posted an excellent safety resource for chemical laboratory safety at <http://safety.dow.com/en>. There are several short video modules that are of particular interest to small labs including modules on personal protective equipment, waste handling, electrical safety, fume hoods, gas cylinder usage, vacuum equipment, cryogenics, and interpreting MSDS sheets. .

Review the [*Lab safety inspection checklist*](#), and familiarize yourself with the hazards and countermeasures for your situation by reviewing the [*Hazardous Materials Exposure*](#) section that follows the checklist. If in doubt, initiate a discussion with your supervisor. This is especially important when going in a new direction or performing a new procedure.

24. Emergency Response and Disaster Preparedness

For Immediate Emergency Assistance, call 911. For non-emergency assistance, contact the UW Campus Police at (206) 685-8973, TTY: (206) 543-3323. Note that AM radio station 710 is the official Emergency Broadcast Station for the Seattle area.

It is the responsibility of each person to know the proper actions to take during an emergency. Therefore, **all departmental personnel are responsible for reading the contents of** the University Emergency Plan (<http://www.washington.edu/emergency/what-do-case-emergency>) and the Department Emergency Plan (http://www.cheme.washington.edu/files/department_emergency_plan.pdf).

The following are some highlights from the [*Departmental Emergency Plan*](#):

General Preparedness: All staff, faculty, and students should be aware of evacuation routes and procedures. Personnel should know the location of first aid kits, fire alarms, and extinguishers. Floor monitors are responsible for walking through their assigned areas in case of evacuations and for reporting to the emergency plan coordinator at the assembly point. These activities must not significantly delay departure from the building or put the monitor in danger. If an evacuation of the building is necessary, key personnel for each laboratory will make an effort to shut down the lab before exiting the building.

Building Evacuation:

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- When an alarm sounds, close all doors and windows; shut off heat-producing equipment and gas, steam and water flow sources; return hazardous materials to storage.
- Use emergency flashlights or lightsticks (located in each laboratory) if necessary to find exits.
- Assist wheelchair users to the stairwell at the east end of the building. Contact the emergency coordinator (in the red hat) in the assembly area and tell her the location of the wheelchair user.
- Assist visually or hearing-impaired individuals to evacuate the building.
- Evacuate the building, using stairwell exits only. **DO NOT USE THE ELEVATOR.**
- Assemble on the south lawn between the Benson front steps and the garden. Remain there until an emergency official gives the “all clear” to re-enter the building.
- **IMPORTANT:** If you hear an alarm, you should evacuate immediately following the route on the building evacuation plan. Close doors behind you.

Medical Emergency:

- Call 911 and provide your name, building name, floor, location, and details about illness or accident.
- Provide first aid assistance only to the extent of your personal training and ability.
- Do not move the injured or ill person unless it is necessary to avoid further injury.
- Have someone meet the emergency personnel to direct them to the location.

Fire:

- If the fire is no larger than a wastebasket and you have fire extinguisher training, you may attempt to put out the fire.
- Otherwise, pull the fire alarm (which notifies UW Police and Seattle Police Department).
- If the fire alarm does not work, call 911 from a safe location.

Earthquake:

- Take cover under a desk, table, or in a doorway.
- Stay away from outside doors, windows, and objects that could fall.
- Call 911 to report any injuries. Give first aid only to the extent of your personal training.
- After the trembling ceases, evacuate the building and assemble on the south lawn between the Benson front steps and the garden. Stay away from overhead lines, poles, or other objects that could fall or shatter. Be prepared for aftershocks.
- Report structural damage or other problems to Plan Coordinator (in the green hat) at the assembly point.
- Wait for clearance to leave the area or to return to the building.

Bomb Threat:

- Always take written or verbal bomb threats seriously.
- Listen to the caller carefully. Obtain and write down as much information as possible, especially regarding where the bomb is supposed to be located and when it is set to explode. Try to remain calm and polite.
- If possible, identify characteristics of caller (e.g., age, sex, accent, voice) and any background noise.
- Report the bomb threat immediately by calling 911. They will determine if the building should be evacuated.
- Do not search for a bomb or touch any suspicious objects.

Shooter: An active shooter is defined as an armed suspect that is discharging a firearm at people or into an area where it is reasonably expected that persons could be struck by suspect fire. These situations require law enforcement units to take immediate action to end the danger. Every incident varies, making it impossible to provide an absolute answer for every situation; however, here are some brief tips:

- Find a room where you can secure it so that the shooter cannot enter.

- Do not stand in front of windows.
- Do not run down hallways or hide in bathrooms since neither are securable.
- If you are outside, find a wall or bushes where you can hide.
- If possible, call 911 from a mobile phone, but only after seeking shelter
- When the police arrive, make sure the shooter is no longer active before exiting your shelter.

25. Libraries

The UW Library system maintains an excellent [website](#), where you will find links to search the entire catalog, specialized databases, etc. During orientation you will participate in a session highlighting some of the main electronic library tools used by our department including Web of Science, EndNote, and Google scholar. There are many libraries on campus. They include the main Suzzallo and Allen libraries and special libraries for Engineering, Physics, Mathematics, and Health Sciences.

26. Photocopies

The photocopy machine in BNS 101 requires an authorization code. Graduate students may use it for the following purposes:

- To make photocopies for a ChemE class when it is part of their TA or TE position: Get the authorization code from the course instructor or the staff in BNS 105.
- To make photocopies related to research: Authorization code will be the last 4 digits of the research budget. Get this from your advisor, who will receive a record of all photocopies charged.

Before using the photocopier for the first time, ask the support staff in BNS 105 for an orientation. The photocopier also has scan-to-pdf capability. There are several copy centers on campus that provide specialized and general copying services. See <http://f2.washington.edu/fm/c2/printing-copying/hours-locations> for more information.

NOTE: When photocopying journal articles or book extracts, be sure you are complying with US copyright laws.

27. Graduate Student Lounge

The graduate student lounge (BNS B51) includes table space for eating lunch, a refrigerator and freezer, a microwave and toaster ovens, coffee makers, current newspapers and magazines, and snack foods⁶. Entry requires a standard grad student key. There are also general-use tables in the main entry of Benson and on the patio outside the building's south entrance.

28. Shower Facilities

The basement-level bathroom includes a unisex locker room and shower for grads and faculty (BNS B08B). If you need a locker you should bring a lock and select an unused locker. Please have your name on the outside in case staff need to get into the locker.

29. Recycling and Trash Disposal

The UW has an active paper-recycling program involving daily pickup of sorted office paper/newspaper by the custodial staff. In addition, Benson Hall has recycling bins for mixed paper, newsprint, plastic and glass bottles, and aluminum cans at multiple locations (hallways on each floor). If you'd like recycling bags or a desk-side container for your office or lab, see the ChemE Business Office.

⁶ Pay on the honor system. Profits help fund ACES events.
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Boxes need to be broken down. Flattened boxes can be taken to the trash room in the basement (next to the Graduate Student Lounge) or then be left in the hall for the custodian to recycle. One of the dumpsters there is devoted to cardboard recycling. Other garbage goes in your office's garbage can. If it does not fit there, take it to the dumpster in the basement trash room.

Take surplus supplies and equipment purchased with UW funds to the research engineer for proper handling. Do not simply throw them away. This is especially important for items having a UW equipment tag number.

30. Change of Address (while enrolled at the UW)

To ensure timely delivery of official UW documents and ChemE notices, report all changes in your mailing using the [MyUW](#) on-line system. When you are ready to leave the department there is a process you are required to follow. Please access the [checkout lists](#) available on MyChemE.

31. Events, Recreation, and the Experimental College

The UW offers many cultural and recreational opportunities. Some campus news and events are highlighted at <http://www.washington.edu/discover/visit/uw-events/>. In addition, the UW's recreational sports program for faculty, staff, and students includes an Intramural Activities (IMA) Building. The facilities include racquetball, tennis, swimming, intramural sports, golf, handball, and squash. For more details, see: <http://depts.washington.edu/ima/>.

32. MyChemE

There are a number of helpful documents (including a link to this document) at the [department](#) website. Select MyChemE in the top right corner to log in.

33. Books

Although it is possible to order textbooks using the Internet, most students use the [University Bookstore](#) (4326 University Way N). If you collect your receipts, you can apply for a 10% refund. Please see the University Bookstore [website](#) for details on this patronage refund and other matters.

D. International students

1. Tax ID number

If you are going to be employed as a TE, TA or RA while in the department, you must have a social security number. Refer to the International Students Services [website](#) for the most up-to-date information on requirements and steps involved in this process. If you do not intend to be employed, but receive a scholarship or fellowship in excess of tuition and fees, then you may need to apply for an ITIN (Individual Tax Identification Number). Refer to the International Students' Services website on [Money Matters](#) for the most up-to-date information on requirements and steps for applying for the ITIN.

2. Additional Tax information

Rules regarding taxes are complex! Please consult the section on [Money Matters](#) in the International Student Services website for up-to-date information.

3. Language Requirements

Students from non-English-speaking countries who did not receive their undergraduate degree at a primarily English speaking institution must pass certain language exams (see [Graduate School Memorandum No. 8](#)) to be considered to be making satisfactory progress. Students who have not met the Spoken English Language Proficiency Requirement before the end of autumn quarter of their first year must notify the GPA prior to the end of the autumn quarter so that TE assignments can be modified if necessary (meeting the requirement is required for all TAs, and all PhD students are expected to serve as TAs at some point). **Students who have not met the requirement by the end of the first year will be considered to not be making satisfactory progress and will lose financial support.**

Please review [Graduate School Memorandum No. 15](#) for a complete understanding of the acceptable scores required to meet the language requirements for appointment as a TA. It is your responsibility to ensure that you meet these requirements. If you are an international TA (ITA) experiencing difficulties meeting your responsibilities as a TA due to communication barriers, the department may recommend you participate in consultations with the [Center for Teaching and Learning](#).

4. Offices for International Student Matters

The [International Student Services \(ISS\)](#) handles all matters related to international student services including tax (see above), travel signatures, maintaining visa status and so on. All international students are assigned to a counselor at the ISS for personal inquiries. Emails are encouraged, but drop-in advising is available (see website for drop-in hours). The ISS front desk is open Monday - Friday 10:00 a.m. - 4:00 p.m. in Schmitz Hall 459.

The [Foundation for International Understanding Through Students \(FIUTS\)](#) office takes care of cultural and social and social matters related to international students, including homestay, communication classes and international student orientation. The FIUTS office is located at HUB 206.

The UW also provides additional special services for international students These services also include: language instruction, coordination with community-based social support organizations, insurance, *etc.* Please see <http://www.washington.edu/students/genat/front/International.html> for more details.

II. University Policies and Procedures

A. Grading System

1. Numerical grading scale

The University of Washington and the Department of Chemical Engineering uses a numerical grading system. Instructors may report grades from 4.0 to 0.7 in 0.1 increments, and the grade 0.0. The latter denotes failing work or unofficial withdrawal. The lowest possible passing grade for a graduate student is a 2.7. The equivalence between our numerical system and the traditional letter grades is as follows:

A	4.0-3.9	C	2.1-1.9
A-	3.8-3.5	C-	1.8-1.5
B+	3.4-3.2	D+	1.4-1.2
B	3.1-2.9	D	1.1-0.9
B-	2.8-2.5	D-	0.8-0.7

C+ 2.4-2.2

E 0.0

You may obtain additional information on grades and scholarship rules from the Graduation and Academic Records Office, 264 Schmitz.

2. Non-Numerical Grades

You may also receive one of the following non-numerical grades (as determined by the instructor):

CR Credit awarded in a course offered on a credit/no-credit basis (see next section). You receive credit, but your GPA is unaffected.

NC Credit *not* awarded in a course offered on a credit/no-credit basis (see next section). Your GPA is unaffected.

I Incomplete. An instructor may assign this grade only when you have been attending and doing satisfactory work until within two weeks of the end of the quarter, and you furnish proof satisfying the instructor that you can't complete the work because of illness or other circumstances beyond your control. The instructor must file (with the head of the unit offering the course) a written statement listing the reasons for the incomplete and indicating the work required to remove it. To obtain credit (and a final grade), you must convert an *I* into a passing grade no later than the last day of the next quarter in residence. *NOTE: Do not reregister for the course!* The Dean of the college offering the course may waive this rule, but in no case can you convert an *I* into a passing grade if more than two years elapse.

N This grade effectively means "Not Yet." It indicates that you are either undertaking an extended multi quarter project or your grade is contingent on the outcome or conclusions you make. A final grade will be given at the end of the quarter the work is completed. This is used only for courses not completed in one quarter, such as undergraduate or graduate research projects and thesis work, *e.g.*, ChemE 600, 700, and 800.

You may also receive one of the following non-numerical grades if the student initiates the appropriate process:

W Official withdrawal or drop from a course from the third through the seventh week of the quarter. A number designating the week of the quarter is recorded with the *W* when a course is dropped. It doesn't affect GPA calculations.

HW Assigned when a student is allowed a [former quarter drop](#) (formally called a hardship withdrawal) from a course (for example, due to serious medical or family situations) any time after the 14th calendar day of the quarter. It does not affect GPA calculations.

RD Registrar drop. Assigned when a student drops a course through the Current Quarter Drop process between the third week of the quarter through the end of the quarter and/or through the Former Quarter Drop process when a student completes the process to have a grade changed to RD for a quarter that has passed. RD. grades are not calculated in GPA calculations.

NOTE: If you withdraw unofficially, you will receive a grade of 0.0.

The student may also elect to take a regular numerically graded course on the basis of receiving only a Satisfactory / Not Satisfactory grade. The student must initiate the processes, and the instructor is not aware that the student is taking the course as S/NS. The grades are:

S Satisfactory grade for courses taken on a satisfactory/not-satisfactory basis. The instructor actually gives you a numerical grade, but the Registrar converts it to either an *S* or an *NS*. You receive credit for the course on the transcript, but the grade has no effect on your GPA. In

addition, the course *will not count towards satisfying your degree requirement for numerically graded courses*.

NS Not-satisfactory grade for courses taken on a satisfactory/not-satisfactory basis. You receive no credit, but your GPA is unaffected.

3. Grade changes and appeals

No instructor may change a grade submitted to the Registrar *unless* the instructor erred when assigning it⁷. If you think you were improperly graded, discuss the matter with the instructor. If you are not satisfied with the instructor's explanation, submit a written appeal to the Department⁸ Chair, with a copy to the instructor. The Chair consults with the instructor to ensure that the evaluation has not been arbitrary or capricious. Should the Chair believe the instructor's conduct to be arbitrary or capricious, and the instructor declines to revise the grade, the Chair appoints one or more faculty members to evaluate the student's performance and assign a grade. Once a student submits a written appeal, this document and all subsequent actions are recorded in written form for deposit in a department or college file. If you do plan to appeal, please read [the information on the process](#) before beginning the process to get the timeline and details correct.

4. Grade Reports

Use [MyUW](#) or contact the instructor to check final grades. They are usually available within two weeks after the quarter ends.

5. Scholarship & GPA Requirement

You must achieve a cumulative GPA of 3.00 or above to graduate. Your GPA depends on numerical grades earned in 400- and 500-level courses *only* (so any remedial coursework in 300-level courses will not be calculated into the GPA). This is true of 400- and 500-level classes regardless of the department offering the course (so a STAT 500 level class will count toward your GPA). Failure to maintain a 3.00 GPA, either cumulative or for a given quarter, constitutes low scholarship, and the Graduate School may take action, which – depending on the circumstances – can be a warning, probation, or dismissal.

6. Repeating a Course

As a graduate student, you may repeat any course. Both the first and second grades count in your cumulative GPA. Subsequent grades will *not* affect your GPA, but will appear on your permanent record. In any case, only one instance of the course applies toward total degree credit requirements.

B. Full-time Enrollment

Most financial aid packages and assistantships require full-time enrollment (except in the Summer Quarter). Full-time enrollment requires registration for at least 10 credits (full time registration for grad students is between 10-18 credits). If this is a problem for any reason, please contact the GPA or GPC.

C. Summer-quarter Enrollment

RAs and TEs should usually register for two credits. This is normally covered by the DYSS seminar (listed as a 599) Here are some additional considerations:

⁷ In no case can a grade be changed after a degree has been granted.

⁸ This corresponds to the department offering the course, not necessarily ChemE. If a non-departmental program offered the course, submit the appeal to the College's Dean.

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- In some cases, loan payback will be initiated if the student is registered less than ½ time during the summer. Contact the Financial Aid office to confirm.
<https://www.washington.edu/students/osfa/graduate/>
- International graduate students should verify requirements for their visa. If unsure, please contact [*International Student Services*](#).

D. On-Leave status

Graduate students are required to maintain graduate status during their program of study. Failure to maintain continuous enrollment constitutes evidence that you have resigned from the Graduate School and requires reinstatement to the University of Washington (see below). To maintain graduate status, you must be enrolled on a full-time, part-time, or official On-Leave basis from the time of first enrollment in the Graduate School until completion of all degree requirements. See the [summary of the leave policy](#) and Graduate School [Memorandum 9](#) for eligibility and procedures.

NOTE: You must be registered when applying for the Master's degree, passing the Master's final examination or Ph.D. general or final examinations, filing the thesis or dissertation, and receiving the degree. You must also be registered if you have a TE or RA appointment.⁹

NOTE: The Graduate School normally allows six years to complete requirements for a Master's degree, and 10 years for a Ph.D. Periods spent On-Leave or on an unofficial leave status count when computing the total elapsed time.

On-Leave status entitles you to use the UW libraries and maintain access to e-mail accounts. You are *NOT* entitled to extensive faculty and staff counsel, examinations of any type (except for language competency), thesis/dissertation filing, residency credit, University housing, student insurance, or any form of financial assistance. You may use the Hall Health Primary Care Center on a pay-for-service basis and may pay to use the IMA.

E. Reinstatement to the Graduate School

Students previously registered in the Graduate School who have failed to maintain graduate student status (on-leave status was not secured or registration was not maintained) but wish to resume studies within the same degree program must file a request for reinstatement to the Graduate School. Requests will first be reviewed and approved by the department. Once the department has approved the request and the Graduate School has confirmed students' eligibility for reinstatement, students will be notified to pay a non-refundable reinstatement fee before registering for the requested quarter of reinstatement. For questions regarding on-leave status, please contact the ChemE Graduate Program Advisor and/or Graduate Enrollment Management Services at uwgrad@uw.edu or (206) 685-2630.

F. Dropping Courses and Withdrawals

Important: Consult the quarterly [Time Schedule](#) for specific deadlines.

1. Dropping courses

You may drop courses without restriction through the second week of the quarter. No record of such dropped course(s) will appear on your transcript. You may drop one course each academic year (defined as

⁹ This rule includes the Summer Quarter.
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September through August) after the 14th calendar day of the quarter but no later than the seventh week of the quarter. In this case, the withdrawal will appear on your transcript.

2. Withdrawal for the quarter

If you are unable to attend for the quarter, it is your responsibility to withdraw. You may withdraw using MyUW (only through the 7th week of the quarter), by email from your UW linked email account to regoff@uw.edu, in person, or by writing to the Registrar's Office, Box 355850, University of Washington, Seattle, Washington 98195-5850. Withdrawals by mail are effective on the date of the post-mark. Courses dropped as part of a complete withdrawal from the University during the first two weeks of the quarter are not recorded on your UW transcript. The date of a complete withdrawal is recorded, however.

III. Departmental Policies and Procedures

A. Departmental Degree Programs

Each graduate student is admitted into a specific Degree Program in the Department of Chemical Engineering. The Degree Program that a student is admitted into defines additional specific rules, procedures, and requirements. The two Degree Programs are the Doctoral Program and the Master's Program. In general, most students admitted into the Doctoral Program receive financial support while students admitted into the Master's Program do not receive financial support. See sections IV and V below, respectively, for Program specific rules, procedures, and requirements.

B. Academic Advising

The Academic Advisor is a ChemE faculty member who helps the student to select a course of study and monitors progress toward the degree. New ChemE graduate students receive academic advising during the ChemE orientation event. The Graduate Program Coordinator (GPC, Prof. DeForest), advises students who have not been assigned to a research group. Once a student joins a research group, however, their Research Advisor acts as the student's Academic Advisor. The Graduate Program Advisor (GPA, Allison Sherrill) will also help you navigate through the program successfully.

C. Registration and Scheduling

You must use the web-based [MyUW](#) service to register for courses. You will find a button for this on the [UW home page](#). To gain access, you will need your UW NetID, which you can establish using a [web-based form](#) if you have not already done so. If you need help with registration or have a question, do not hesitate to telephone or drop in to see the ChemE Graduate Program Advisor.

Before attempting to register, consult the [Time Schedule](#) to see what is available and discuss options with your academic advisor. Certain courses require an *entry code*. (The time schedule notes such courses.) You will need to obtain the entry code from the department offering the course prior to registering (you will be asked for the code during the registration procedure).

Most graduate courses have plenty of space available, and you should have no trouble registering. Certain courses – especially 400-level courses – have limited enrollment and demand that exceeds capacity, and thus you should register for them at the first opportunity. See the [Academic Calendar](#) for registration dates.

D. Research Credits

Research credits are credits accrued from taking one of the following courses:

- ChemE 600 Independent Research
- ChemE 700 Master's Thesis
- ChemE 800 Doctoral Dissertation

The various Degree Programs have different requirements for these courses. Please see the sections on procedural details below.

E. Seminars

You must register for and attend the main ChemE seminar each autumn, winter and spring quarter (ChemE 523 and summer quarter (ChemE 599/2credits) unless it conflicts with another course required by your advisor. This seminar generally features a guest lecture series providing students the opportunity to meet experts in the field and learn about a variety of specialty areas. Many other seminars are worthwhile, and students should make it a habit to attend seminars that are outside their specialty area as a way to enhance breadth.

F. Appointments (RA, TA, and TE)

Most ChemE graduate students enrolled in the Doctoral Program receive financial support. The origin of that financial support depends on the type of appointment. The two most common appointments are the Research Assistantship (RA) and Teaching Assistantship (TA). When appointed as an RA, the student may devote full effort to research. When appointed as a TA, the student must devote some effort to assisting with courses preparation, instruction, grading, etc. In the Department of Chemical Engineering, an additional appointment category is a Teaching Experience (TE). A typical TE consists of a 50% TA appointment (around 20 hrs/wk) and includes professional development to help the student prepare to be a teacher/instructor. Note that University [*Executive Order No. 28*](#) covers the official details of appointments. **IMPORTANT:** These appointments are covered by a union contract. For official regulations, <https://hr.uw.edu/labor/unions/uaw/ase-contract>.

1. RA Responsibilities

ChemE RA appointments are at a 50% rate (including summers). The stipend level is the same for all students (note that students with Fellowships may receive additional stipend as stipulated by the fellowship). Your main responsibility is to make satisfactory research progress. The Department expects enthusiastic participation (including student-generated research directions), acquisition of deep technical knowledge and skills in your specialty, and a record of scholarly publications to be the norm. Your attitude should be that of a professional, not an hourly employee.

You should meet regularly with your advisor (and Ph.D. supervisory committee if applicable) to discuss progress and set goals. Some advisors prefer periodic scheduled meetings, while others use a drop-in approach. In either case, such meetings are essential if the advisor and student are to maintain realistic project objectives.

2. RA Appointment Termination

A student making satisfactory progress but whose project loses financial support will be given the following options:

- Priority for available TE appointments.
- An RA on another supported project, perhaps with another advisor. The person who will be providing the support must approve the change.

If progress is *unsatisfactory* and the advisor chooses to terminate support prior to completion of degree requirements, the student must be notified in writing at least 90 days prior to the planned termination date. If this date passes and support has not been terminated, a new 90-day notice is required for any subsequent termination action. NOTE: No advance notice is required for unpaid leaves (see “Vacations and Holidays”).

Consult the Graduate Program Coordinator should a problem arise. If necessary, the ChemE Chair will appoint an *ad hoc* ombudsman (a ChemE faculty member) to mediate unresolved conflicts. This ombudsman must be acceptable to both the student and advisor. The ombudsman can seek resolution by private consultation with the parties involved, presentation of the case to the full faculty, or other means.

If a student withdraws from a research project or degree program, the student waives the right to advance notification and funding terminates immediately.

3. Teaching Experience Requirements

The ChemE faculty considers Teaching Experiences (TEs) to be an integral part of Doctoral Program education. A typical TE consists of a 20-hour a week appointment, though occasionally half-time appointments (10 hrs/week) are assigned. TE appointments include professional development to help the student improve communication skills and prepare to be a teacher/instructor. The Department currently requires the following minimum number of TEs to be completed prior to graduation:

Ph.D. students: 2 quarters at 20 hours per week OR 4 quarters at 10 hours per week

Please note that the above requirements represent the minimum number of TE assignments required by the degree. Students are routinely assigned more TE quarters than the number above. This is particularly true if a funding lapse occurs for their project or we have high TE needs for a particular quarter.

Some courses require a lower number of hours per week and students may be requested to devote 10 hrs/week. However, a “half” assignment counts for ½ of a 20 hr/wk assignment (so four 10-hr/week assignments would meet the minimum). You may elect to serve for additional quarters if you are making satisfactory progress and your research advisor agrees. For example, students who are approaching graduation and wish to pursue a faculty career may request that they be given *enhanced or primary responsibility* for a course.¹⁰

NOTE: International students from non-English-speaking countries must satisfy minimum English proficiency standards before they can be appointed as TEs (see [Graduate School Memorandum No. 15](#)). Failure to satisfy these requirements within the first year constitutes a lack of sufficient progress and may result in loss of financial support.

4. TE Selection

TEs will be assigned each quarter. MS students are ineligible to hold a TE, but all other students should plan to serve one quarter per year until they have satisfied the departmental requirement (see previous section).

As TE service usually reduces research productivity, strategize with your advisor at the beginning of the academic year to choose the most convenient time. Possible considerations include the following:

- Your availability. Do not plan to serve during a quarter when you will be away from campus for more than a few days.
- Your advisor’s funding situation. RA funds might have to be used up before they expire, in which case you may need to delay TE service. Alternatively, a gap in RA funding may need to be filled by TE service.

¹⁰ This requires approval by faculty vote. Such appointments will carry an appropriate job classification to reflect the responsibilities during the quarter while lecturing.
Updated 06/02/2021

- Deliverables. Your advisor may need to produce research results by a certain deadline.
- Course offerings. You may prefer to TE certain courses, or your advisor may need you to assist in a particular course.

When you have worked out a plan, inform the GPA who will either note the request or put you in contact with the faculty member currently in charge of TE assignments.

5. TE Responsibilities

Most ChemE TEs assist a faculty member, who acts as the primary instructor. Typical TE duties include office hours, preparation of homework solutions, homework grading, lab supervision and report grading, supervision of problem-solving discussion sections in lecture courses, and delivering periodic lectures.

Appointments are for a single quarter at a 50% rate, and you should expect to spend an *average* of 10 hours per week (20 hrs per week for a “double”). The instructor should provide you with written notification of your duties prior to the start of the course. *Note: TE responsibilities begin and end at the financial start and end of the quarter, which is typically one week earlier than the start of classes and goes through the end of finals week. Students must be present and available during both of those periods.*

If you think you are being asked to do too much, consult with the faculty instructor, who may otherwise be unaware how much time your assignments require (this is a union contract requirement). If that does not resolve the issue, escalate the concern to your research advisor, the GPC, and then the ChemE Department Chair (in that order).

6. TE Training and Assessment

The UW provides Teaching Assistant (TA) training, and you will be required to attend some of these events. International students receive more extensive training. The UW also maintains a variety of tools and resources to aid TE/TAs. See, for example, the [Center for Teaching and Learning](#) (CTL) and their [online resources](#) which provide excellent information and tools to use in your classroom. Other teaching resources include [Catalyst Web Tools](#) that you can use to build class websites, collect assignments, and conduct surveys.

International TEs attend a half day workshop at the beginning of the year. They may also receive private consultations specifically geared to familiarize them with methods of communication and teaching utilized by successful TAs. All TEs may wish to take advantage of the evaluation services described in the CTL webpage on [Assessing and Improving Teaching](#). The Graduate School requires departments to evaluate TA performance during their first two quarters. See the details in [Graduate School Memorandum No. 14](#).

7. Vacations and Holidays

It is recommended that you coordinate vacation time with your Research Advisor. Also, see the union contract for the official policy: <https://hr.uw.edu/labor/unions/uaw/contract>

If you wish to take additional time off during your appointment, consider one of the following options:

- Make an informal arrangement with your supervisor. Faculty members are typically flexible, provided that the work gets done.
- Request unpaid leave. In this case, keep in mind that you must be on the payroll for a certain minimum time each quarter in order to receive an operating fee (tuition) waiver, insurance coverage, *etc.* Check with the ChemE Business Office (Benson 105) to make sure your leave will not lead to unexpected (unpleasant!) financial consequences.

The quarterly Time Schedule lists official UW holidays.

G. Funding and Fellowships

Although you may have been given an RA or TE appointment, it is wise to vigorously pursue internal and external fellowships as they bring recognition, prestige, and financial reward. National awards such as the [National Science Foundation's Graduate Research Fellowship](#) and the [American Society of Engineering Education's NDSEG Fellowship](#) are highly competitive and extremely prestigious. They offer greater academic flexibility than a standard RA and a higher stipend. The Graduate School maintains [list of fellowships](#). The College of Engineering and Chemical Engineering Department also have a few competitive fellowships.

Keep in mind that the Department's offer of financial support (if any) does not guarantee continuous RA funding from a particular advisor. If your advisor loses funding, you may need to TE more often or seek to change advisors.

H. Graduate Student Awards

The Department currently has three awards to recognize outstanding scholarly achievement by graduate students. They are:

Faculty Lecture Award: The Faculty Lecture Award is based on a student's overall scholarly nature and productivity. Nomination will require the student's CV, a copy of one first-authored published (or accepted) manuscript and a paragraph written by the student's research advisor providing context for the research accomplishments. The winning student will give a 30-minute lecture during a fall seminar slot where they will receive a plaque and a check.

High Impact Publication Award: The High Impact Publication Award will be given based on a single original research (non-review article) publication. The winner will be selected based on the number of citations (ISI Thomson Reuters) in a three year rolling window and will not include self or group citations. To be eligible, the student must be currently enrolled in the graduate program. Thus, early publications have an advantage. The winning student will receive a certificate and a check during the same fall seminar period as the Faculty Lecture Award.

Outstanding TE Award: In addition to obtaining the satisfaction intrinsic to good TE service, you will be competing for ChemE's Outstanding TE Award. Awardees receive a small monetary honorarium and a certificate, are celebrated in a yearly awards event, and have their names engraved on a plaque maintained in the Benson Hall Lobby. They are selected by a vote of the ChemE students and faculty.

Outstanding Service Award: The Outstanding Service Award is presented annually to a single graduate student for impactful dedication and service to the field of Chemical Engineering. Examples of service may include but are not limited to: K-12 outreach, committee involvement/leadership, student mentorship, proposal and paper reviews, working with undergraduate groups (e.g., AICHE, ChemE car), conference organization, panel participation, educational reform and course content creation. The winner will be recognized with a commemorative certificate and a cash prize at the Grad Awards Day celebration in the fall quarter.

I. Travel to Conferences

The Department encourages its graduate students to present their research at conferences. Most research advisors provide at least some financial support for this.

If your research advisor provides support, you must apply for reimbursement after returning from the trip. Be sure to keep all receipts and records. Download a Travel Reimbursement form from the Department's website and submit it to cefiscal@uw.edu. Include copies of your receipts and a copy of any award documentation. If you are requesting reimbursement for amounts in addition to the department award, you must provide a budget number and your advisor must approve.

The [*Graduate School offers limited support for travel*](#) to conferences where you are making an oral presentation. Requests for this funding must come from the department, be within certain deadlines, and used only for transportation expenses.

J. Becoming a Washington State Resident

Eligible U.S. citizens, permanent residents, and those on certain immigrant visas often consider applying for Washington State residency (international students on standard student visas are ineligible). The main advantage is that you become exempt from out-of-state tuition. However, it is extremely difficult to receive residential status. See <http://www.washington.edu/students/reg/residency.html>, for the latest information and procedures.

RA and TE appointments carry an automatic exemption from non-resident tuition. Furthermore, the department will apply for an exemption on the behalf of those receiving fellowship stipends, and we nearly always succeed in this, but there is no guarantee. If you become liable for out-of-state tuition, the Department will not pay it for you.

K. Waivers

To request a waiver of a ChemE requirement such as TE service quarters, minimum GPA for the Ph.D. Prelim Exam, *etc.*, you must submit a petition by email to the ChemE Graduate Program Coordinator. The petition should include an explanation of the student's current situation and detailed plan and timeline for how they will meet the requirement. Requests for waivers of UW Graduate School requirements must go to the Graduate School. If you are not sure who is responsible for the requirement, see the ChemE Graduate Program Advisor or Graduate Program Coordinator for advice.

L. Grievances and Difficulties

The UW has established a procedure to handle formal grievances. For details, please see [*Graduate School Memorandum No. 33*](#). Students seeking complaint resolution under this policy must initiate either an informal conciliation or file a formal complaint within three months of the incident(s) leading to the complaint.

We encourage you to try less formal means first, however. If you are uncomfortable dealing directly with the person(s) involved, please contact the ChemE Graduate Program Coordinator or the ChemE Department Chair for advice and assistance in the resolution.

M. Checking out

We ask that you complete a formal checkout procedure when you leave the Department (at graduation). The [checkout form](#) is available on the department website.

IV. Doctoral Program

The Doctoral Program is for students seeking a Doctor of Philosophy in Chemical Engineering (PhD).

A. Doctoral Degree requirements

1. Minimum Graduate School Requirements for Doctoral Degree

You must satisfy the [Graduate School Minimum Requirements](#) for a Doctoral Degree, which are summarized below (as of 7/28/2015). NOTE: Graduate School policy requires you to satisfy the requirements in force *at the time of graduation* (not when you entered the degree program). Check their website (link above) periodically to make sure you are current on the requirements.

- Complete at least 18 credits of 500-level and above course work prior to the General Examination.
- Complete at least 18 *numerically graded* credits of 500-level and approved 400-level UW courses prior to the General Examination. The same credits may count for this and the item above.
- Compile a minimum of 27 dissertation credits (ChemE 800) over a period of at least three quarters. With the exception of summer, students may take a maximum of 10 dissertation credits per quarter.
- Complete a minimum of 90 credits, 60 of which must be taken at the University of Washington.
- Maintain a minimum cumulative GPA of 3.00
- Pass the General Examination.
- Pass the Final Examination (includes approval of the dissertation by the student's Supervisory Committee).
- Maintain full- or part-time graduate student registration at the UW for the quarter in which the above examinations are completed and the degree is conferred.
- Complete all work for the doctoral degree within ten years.

2. Departmental Requirement for Students with a B.S. in Chemical Engineering

In addition to the requirements listed above, doctoral students must:

- **Core Course Requirement:** Complete at least one numerically graded 500-level course in *each* of the following three areas¹¹: (1) Math/Statistics, (2) Thermodynamics, and (3) Transport Phenomena. ChemE 512, 525, and 530 are the standard way to meet this requirement. All students should plan to take these classes in the first fall quarter unless a specific waiver is granted.
- **Course Breadth Requirement:** Complete at least six graded 500-level courses and approved 400-level courses¹² to satisfy the following:
 - Five courses from at least four of the following categories: Math/Statistics, Thermodynamics, Transport Phenomena, Reaction Phenomena, Biotechnology, Nanotechnology, Scientific Computing and Simulation, Materials Science, Electronic or Optical Devices, and Energy Conversion.
 - One ChemE course in a topic outside the student's primary research area.
- **Teaching Experiences:** Complete at minimum of four 10 hr/wk teaching experiences
- **Complete a Master's Degree:** Complete either a non-thesis or thesis Master of Science in Chemical Engineering (MS ChemE) prior to taking the General Exam.¹³

¹¹ If you have a strong background in one of these areas you may petition the GPC for a waiver.

¹² We automatically approve all lecture based 400-level ChemE courses *except* those required for the B.S. degree. The Graduate Program Coordinator (GPC) approves other 400-level courses on a case-by-case basis.

¹³ Students with an MS ChemE from another university may petition the GPC for a waiver of this requirement.

3. Departmental Requirement for Students with other Undergraduate Degrees

Students whose undergraduate degree is in another engineering or science discipline (e.g., B.S. or B.A. in Biology, Chemistry, Physics, Mathematics, Materials Science, Electrical Engineering, Mechanical Engineering, etc.) but *not* ChemE are required to take and pass ChemE 485 Process Design I. Depending on your undergraduate preparation, the Department may require additional course work (consult with the GPC). In addition, students lacking a strong background in transport are encouraged to take ChemE 330 before attempting ChemE 530 (ME students should be okay to take 530 directly), and students lacking a strong background in thermodynamics are advised to take ChemE 326 prior to attempting ChemE 525 (Chemistry and perhaps Physics students may be okay to take 525 directly). Consult the GPA or GPC if in doubt.

4. Master's Degree Requirement (for students in the Doctoral Program)

Doctoral students must earn a Master of Science Degree in Chemical Engineering (thesis or non-thesis option) after the Preliminary Exam but prior to attempting the General Exam. The non-thesis option is the usual choice as it can be completed easily on the way to a Ph.D. The requirements for the Master of Science in Chemical Engineering (as part of the Doctoral Program) are as follows:

- Complete 39 credits (courses numbered 400-799 with a grade of CR or greater than 2.7)
- At least 18 of the 39 credits must be in courses numbered 500-599, of which at most three may be seminar credits, such as ChemE 523 or ChemE 524.
- At least 18 of the 39 credits must be numerically graded in 500-level or Department approved 400-level courses (typically, 400 level courses that are not required ChemE UG courses are approved). This excludes ChemE 499 and transfer credits.
- Achieve a cumulative GPA of at least 3.0 in the graduate program.
- The Master's Degree Request must be filed according to posted quarterly [*dates and deadlines*](#).

For the non-thesis option, additional requirements include:

- Satisfactory completion of at least six credits of ChemE 600 (Independent Research) with a grade of CR or numerical grade of 2.7 or above. A member of the ChemE graduate faculty must supervise and evaluate the work. ***A written report and oral presentation are required*** for the ChemE 600 project. *However, a published article in a peer reviewed journal or a (Research Advisor approved) submitted manuscript or draft manuscript may be used to fulfill the written requirement.*

For the thesis option, additional requirements include the following (the non-thesis option requirements listed above are not required for the thesis option):

- Satisfactory completion of at least 9 credits of ChemE 700 (Master's Thesis) with a grade of CR or numerical grade of 2.7 or above.
- Submission of a [*Master's Thesis*](#).
- Pass a [*Final Examination for the Master's Degree*](#) (which includes approval of the thesis by the student's Supervisory Committee).

Students who have a Master Degree in Chemical Engineering from another institution are expected to earn a second MS in ChemE from UW but may petition the GPC for an exemption. Also note that an MS degree must meet or exceed the [*Graduate School minimum requirements for MS degrees*](#) at the time of graduation.

5. Student Entering with Graduate Course Work from Another Institution

The UW does not allow doctoral students to transfer course *credits* taken at another university. However, such students will not be asked to repeat classes that are essentially equivalent to those taken elsewhere. The student may petition to the GPC to request that previously taken courses be used to satisfy the core

course or breadth requirements above. The petition must list each such course (course title, course number, number of credits, textbook used, syllabus if possible, the grade received, and the university that issued the credit) and provide evidence as to how they fulfill the breadth requirement. The GPC will notify the student and the GPA whether or not the petition has been approved.

For example, a student who earned 3.3 or above in a graduate-level thermodynamics course at a reputable university would not be expected to take ChemE 525 at the UW and could petition to have the non-UW course satisfy the core ChemE 525 requirement and count in the thermodynamics category for the breadth requirement. However, the student must still earn 18 numerically graded credits in 500-level or approved 400-level courses, but these may be chosen (in consultation with the student's advisor) to enhance the student's research skills or to achieve other educational objectives.

6. Guidelines for Registering for Research Credits

Use the following guidelines when registering each quarter for research credits (ChemE 600, ChemE 700, or ChemE 800):

- Register for 1 research credit your first Autumn.
- Typical registration is for 10 credits every subsequent Winter, Spring and Autumn quarter. However, fewer than 10 is possible if you are taking substantive coursework in a given quarter. It is the responsibility of each individual PhD student, with the help of their advisor and the GPA to ensure that all coursework requirements (including research credits) are being met.
 - Register for ChemE 600 prior to completion of the non-thesis MS degree.
 - Register for ChemE 700 only if you are conducting research towards a Thesis Master's
 - Register for ChemE 800 after you have passed the prelim exam AND completed the MS degree (or have been exempted from the MS requirement).
 - Register for only one research course (i.e., only 600 or only 800, not a combination).
- Register for 2 credits ChemE 599 (the DYSS seminar) Summer quarter unless circumstances require otherwise. (The most common reason to not register is when a student obtains a summer internship, which usually means you need not be registered at all).
- Your total number of credits in any given Autumn, Winter, or Spring must be greater than 10 and less than 18, otherwise you will lose full-time status or be charged extra fees.
- Your total number of credits in any given Summer quarter should be 2, otherwise you will lose full-time status or be charged extra fees.

7. Advanced Data Science Option

The Advanced Data Science Option is a series of extra courses (some substitute for Chem E course requirements - see below), intended for those students who wish to both build and apply new methods of data science. If completed, this option will show up on your degree title. For more complete information, please consult the information found on the [Ph.D. Degree Program](#) description.

Course Requirements

Take three out of four of the following courses, which also fulfill the indicated categories in the typical ChemE graduate degree:

- **Data Management:** CSE 544 - Scientific Computing.

- **Machine Learning:** CSE 546 or STAT 535 - Scientific Computing.
- **Data Visualization:** CSE 512 - Scientific Computing.
- **Statistics:** STAT 509 or STAT 512 AND 513 - Math & Statistics.

These courses fit into the universal requirements as follows: The Department of Chemical Engineering graduate degree requires at least 18 course credits. At least 18 credits must be in 500-level courses (3 credits of seminar are allowed). Numerical grades must be earned for at least 18 credits of 400- or 500-level courses, with students obtaining departmental approval for 400-level courses. Students must complete 30 credits at the UW with 6 – 9 credits of CHEME 600 (Independent Study/Research) for a total of 39 credits for the degree.

In addition, students take at least five courses from at least four of the following categories below, including one CHEM E course in a topic outside the student’s main research area. The highlighted ADS option courses show where they can substitute for other courses that satisfy these requirements.

Math & Statistics	Thermodynamics	Transport Phenomena	Reaction Phenomena	Materials & Biotech	Scientific Computing
CHEM E 481	CHEM E 525	CHEM E 530	CHEM E 445	CHEM E 467	CSE 544
CHEM E 482	CHEM E 526	CHEM E 531	CHEM E 461	CHEM E 554	CSE 546
CHEM E 510	CHEM E 455	ME 533	CHEM E 560	CHEM E 555	CSE 512
CHEM E 512	CHEM 522	ME 534	CHEM E 564	CHEM E 556	CHEM 465 A
CHEM E 575			CHEM E 565	CHEM E 558	
CHEM E 582				CHEM E 559	
CHEM 526				CHEM E 570	
STAT 421				CHEM E 584	
STAT509				CHEM E 590	
STAT 512					
STAT 513					

IGERT students:

- STATs course covers Category 1
- Second IGERT course covers Category 6
- Two (non-IGERT) courses to cover some two other Categories
- Remaining required course can be the third IGERT course, also in Category 6

8. Data Science Option

In addition to the Advanced Data Science Option (ADSO), the Chemical Engineering Department offers the Data Science Option (DSO). The DSO is complimentary to the ADSO. The ADSO is intended for students with a strong computer science background. The DSO is geared toward students with little or no prior data science knowledge. The course requirements for the DSO option for the Chemical Engineering degree programs follow:

- Take the two following required classes (offered each winter quarter)
 - ChemE 546, Software Engineering for Molecular Data Scientists (3)
 - ChemE 545, Data Science Methods for Clean Energy Research (3)
- After completing these courses, students must choose one of the following:
 - Complete an approved capstone experience with a grade of 3.0 or higher under ChemE 547. (Prior to 2019, this was registered as either independent study credits or as a ChemE 599).
 - Complete one of the following approved courses in the area of data science, from the ChemE Advanced Data Science Option (ADSO) or its introductory counterpart
 - **Data Management**
 - CSE 414, Introduction to Database Systems (4)
 - CSE 544, Principles of DBMS (4)
 - **Machine Learning**
 - CSE 546, Machine Learning (4)
 - STAT 535, Statistical Learning: Modeling, Prediction and Computing (3)
 - CSE 416/STAT 416, Introduction to Machine Learning (4)
 - **Data Visualization**
 - CSE 512, Data Visualization (4)
 - CSE 412, Introduction to Data Visualization (4)
 - **Statistics**
 - STAT 509, Introduction to Mathematical Statistics: Econometrics I
 - STAT 512-513, Statistical Inference (4 credits ea.)
- Register for and attend any combination of at least four quarters of the following seminars:
 - Clean Energy Institute Seminar
 - eScience Community Seminar
 - Molecular Engineering Institute Seminar

9. 9. Dual Title in Nanotechnology degree option

The Molecular Sciences and Engineering Institute also offers dual title degree in [Nanotechnology and Molecular Engineering](#) for current pre-doctorate students in specific [departments](#) the opportunity to earn a dual titled Ph.D. degree. This single degree would include the discipline of the student's home department, as well as the phrase "Nanotechnology & Molecular Engineering". For ChemE students, the degree title reads: "Doctor of Philosophy in Chemical Engineering & Nanotechnology and Molecular Engineering."

Details of the requirements can be found on the [MoIES website](#), along with helpful [forms and checklists](#) for those electing this option.

B. Typical Timeline and Course Schedule

The following is the required timeline for a student entering with an undergraduate degree in chemical engineering but no graduate degrees (credits for each course are in parentheses. Students entering the Ph.D. program having already completed an Master's Degree in Chemical Engineering, as well as those with an

undergraduate degree not in Chemical Engineering, please schedule a meeting with the GPA (Allison Sherrill) to discuss a modified timeline for your doctoral studies.

First Autumn Quarter

Select Research Advisor in November and take the following recommended courses:

ChemE 512 (3)	Methods of Engineering Analysis ¹⁴
ChemE 525 (4)	Thermodynamics
ChemE 530 (4)	Transport
ChemE 523 (1)	Seminar
Elective (0-3)	Check course offerings and consider your workload ¹⁵
ChemE 600 (1)	Research ¹⁶

First Winter Quarter

Begin research and take the following recommended courses:

ChemE 523 (1)	Seminar
ChemE 560 (3)	Reaction Engineering or elective
Elective (0-3)	Check course offerings and consult with your advisor
ChemE 600 (10)	Research ¹⁷

First Spring Quarter

Appoint supervisory committee. Meet with your research advisor to carve out specific goals to be achieved before the Preliminary Exam in the following Autumn. You should also give a presentation to your research group and advisor before the end of the quarter that articulates your near-term goals to achieve prior to the preliminary Exam. Course work and research:

ChemE 523 (1)	Seminar
Electives (0-6)	Check course offerings and consult with your advisor
ChemE 600 (10)	Research

Most students complete the breadth requirement with electives during this quarter.

¹⁴ Many international students and some domestic students have already had the material covered in this course. They should consider substituting CHEME 510 or other suitable course approved by the GPC. Note that the course does not have to be a ChemE course. If you choose to pursue this route, you must petition the GPC and obtain approval.

¹⁵ If you feel well prepared for autumn quarter, you should take an elective that gives you background or depth in an area of interest. However, if you feel that your preparation in transport, thermo, or math may not be rock-solid, it may be best to not take an elective. Note: You can always sign-up for an elective, see how things go, and drop it before the end of the 14th day of the quarter. See the official [UW drop policy](#).

¹⁶ Get the faculty code from the GPA. Use the faculty code corresponding the GPC for this quarter, and then use faculty code corresponding to your Research Advisor for future quarters. The Chem E 600 credit you receive for this quarter is to account for the time you will spend researching and applying to join a research group.

¹⁷ Please be sure to register for at least 1 credit of ChemE 600 and enough to make sure that your total load for the quarter is at least 10 credits.

First Summer Quarter

Conduct full-time research. Do not register for more than two credits in the summer unless you have checked with the GPA. You might have to pay extra fees.

ChemE 599 (2) Distinguished Young Scientist Seminar Series

Second Autumn Quarter

Take the Preliminary Examination by the end of this quarter. Conduct coursework and research:

ChemE 523 (1) Seminar
Elective (0-3) Check course offerings and consult with your advisor
ChemE 600 (10) Research

Second Winter Quarter

You should apply for and complete the MS degree this quarter or the following Spring Quarter. Once you have earned the MS (or are exempt and have passed the Prelim Exam), register for ChemE 800 rather than ChemE 600. Conduct course work and research:

ChemE 523 (1) Seminar
Elective (0-3) Check course offerings and consult with your advisor
ChemE 600 (10) Research

Subsequent Quarters

Conduct course work and research. Complete your General Examination before the end of the third year and register for the following courses each quarter:

ChemE 523 (1) Seminar
Elective (0-3) Check course offerings and consult with your advisor
ChemE 800 (10) Research

C. Satisfactory Progress Milestones

The following assumes that you have an undergraduate degree in chemical engineering and no graduate degrees. Otherwise, the Graduate Program Coordinator establishes milestones on a case-by-case basis.

- Explore research groups, indicate your preferences and accept placement with a research advisor before the end of autumn of the first year
- Form an approved supervisory committee before the end of spring quarter of first year
- Pass the preliminary exam on either the first or second try (no third tries are possible). The first attempt is to be completed by the end of the fifth quarter in the PhD program.
- Pass the general exam before the end of your third year in the PhD program
- Pass the final exam before the end of your sixth year in the PhD program
- Receive a grade of CR or 3.0 or higher, in each quarter of ChemE 600, ChemE 700, and ChemE 800

If you fail to meet one of the above milestones on time, you are subject to being placed on probation. The GPC will consult with your Ph.D. committee to determine whether probationary status is appropriate. ***Once you are on probation for a specified deficiency, you must return to normal status within one quarter. Otherwise, the Department's obligation of financial support terminates.***

D. Procedural Details for the Doctoral Program

This section contains the detailed information on the requirements for each step through the program, including requirements for the Preliminary Exam and General Exam. The student is responsible for scheduling such that all milestones are completed at the required times. Any difficulties should be discussed with the student's research advisor first, and then the GPC if necessary. The policies apply to all students in the Doctoral Program, including those entering with prior graduate-level degrees. Adjustments will be considered on a case-by-case basis. Students starting during Winter or Spring should consult with the GPC on an appropriate timeline.

1. Advisor and Research Group Selection

The most important milestone of your first year is the selection of your advisor. The advisor will be responsible for helping you develop an academic plan, identifying a research project and developing a research plan. The advisor is also primarily responsible for funding your work and will play a crucial role in identifying your post-graduation career options. In addition to finding a research fit, keep in mind the importance of finding a good personality fit. This applies to you and your advisor as well as you and the other members of the research group. Remember - you will be working closely with these people for approximately the next five years.

In order to choose an advisor wisely, you must learn about the research of faculty in the department (primarily) and in related departments. All new students will receive a handout describing the available projects early in Autumn quarter. Each student **must** attend a series of 20-40 minute seminars that describe these projects, and then consult with at least five professors regarding prospects for work in their group. This consultation may be conducted individually or in small groups and is arranged between you and each professor. Later, all students hand in at least three viable choices for an advisor. The faculty then meets to decide on advisor assignments (usually in late November). While we strive to match students with their first-choice faculty member this is not always possible. In these instances, the department will assign you a research advisor and your satisfactory progress is contingent upon accepting this assignment.

This is one of the most important decisions you will make as a graduate student, so in addition to attending the faculty presentations, consult fellow students, staff, and others, keeping in mind that some opinions may not be objective. See also "Appendix A: On Choosing a Research Project".

2. Student Guidance and Evaluation

Your research advisor has primary responsibility for your guidance, including feedback on your research performance. Your supervisory committee provides added perspective, and you should consult committee members whenever you feel the need. The Graduate Program Coordinator enforces the established minimum standards and milestones for satisfactory progress. However, additional milestones may be added by the advisor.

3. Appointing the Supervisory Committee

Your Supervisory Committee guides you throughout your tenure in the graduate program. You will set up a tentative Supervisory Committee prior to the end of your third quarter. This will be the evaluation

committee for your Preliminary Exam. Upon successful completion of the exam and after further research activity you may decide to change some of your committee members or add committee members, given new research directions or other concerns. The Supervisory Committee that guides you through the General Exam and Final Exam does not have to be the same as the Supervisory Committee that oversees your preliminary exam (although it typically is the same). Please read through the information provided by the Graduate School to familiarize yourself with the [*roles and responsibilities of the committee members*](#) as well as your own responsibilities to the members. Note:

- (a) At least three members of the Supervisory Committee must be appointed no later than the student's third quarter (typically Spring of the first year). The student should consult his/her advisor regarding committee makeup. The Supervisory Committee must be composed of at least 4 members prior to the General Exam.
- (b) Committee members should be willing to serve for the duration of the Ph.D. There should be a chair, at least two members and a Graduate School Representative (GSR). Please ensure that the following conditions regarding the committee composition are met:
 - At least two (including the chair) must be members of the *ChemE* Graduate Faculty.
 - At least two must have at least 50% faculty appointments in Chemical Engineering.
 - At least three must be members of the UW Graduate Faculty.
 - One must act as the [*Graduate School Representative*](#) (GSR). The GSR must not have his/her primary appointment in ChemE. The student should consult the Graduate School (see link) for additional rules regarding GSR selection. NOTE: Selection of a GSR can be delayed until the General Exam but an earlier choice is encouraged.
- (c) The student must get agreement from each potential committee member.
- (d) The student must then inform the GPA of the proposed committee members before the end of the student's third quarter. The student must articulate how the committee satisfies the above criteria, identify the chair, the departmental affiliations of each, and identify the GSR.
- (e) The GPA will check the composition of the committee. In consultation with the GPC, the committee will be approved or disapproved. If the committee is not approved, the student must propose a new committee composition within two weeks. The GPA will record the names of the committee members once approved.
- (f) When the student is ready to take the General Exam, the GPA sends the names to the Graduate School, and they are appointed as voting members of the official Supervisory Committee for the PhD degree.
- (g) The student may request a change in committee makeup by sending an email to the GPA. Changes must be approved by the GPC.

4. Preparing for and Taking the Preliminary Exam

The preliminary exam evaluates your ability to: (1) *Analyze and correctly critique research done by others*, and (2) *Make concrete progress in original independent research*. Questions during the exam will probe your understanding of fundamental topics, the literature, and your own research.

The Preliminary Exam is to be taken before or during the student's fifth quarter in the PhD program (for most, this will correspond to during the autumn quarter of the second year). Nearly all students entering with a BSChE will take the exam during the fifth quarter at the UW, though a few may be ready to take it during the fourth quarter (summer quarter of the first year). Students entering with an MSChE may be ready to complete the exam prior to the fifth quarter in the PhD program, while students entering with an undergraduate degree in a field other than chemical engineering may petition for an extension. If you fall into the last category, please schedule a meeting with the GPA (Allison Sherrill) to discuss a timeline for completing this exam.

- (a) The student and committee agree upon an exam date, and the student notifies the GPA of the date.
- (b) The student reserves a room and ensures the availability and function of presentation equipment (computer, projector, and any teleconferencing equipment if needed). *The room must be scheduled for 2 hours.* For Benson faculty, try to schedule in Benson 109. For MoLES located faculty, try to schedule in the MoLES building. See the staff in Benson or MoLES, respectively, for assistance in reserving a room.
- (c) Three Supervisory Committee members must attend the exam, and the attending members must include the Research Advisor and one other ChemE graduate faculty. Remote live attendance through Skype or other methods is acceptable. However, giving the exam to a partial set of committee members at different dates/times is not acceptable. If necessary, the exam may be rescheduled, provided that the student submits the written critique within 14 days of receiving the article selection and the exam occurs before the end of the sixth week of the quarter.
- (d) The committee selects the paper to be critiqued. It should have the following characteristics:
- Published recently, typically within the last 3 years.
 - Within the committee's expertise.
 - Related to but not directly in the student's research area.
- (e) 4 weeks prior to the exam, the student sends the committee a reminder and a timeline indicating the date the student should receive the article, the date the student will send the critique and researcher reports, and the date, time, and location of the exam.
- (f) 3 weeks prior to the exam date, the chair of the committee sends the student the paper selection.
- (g) 1 week prior to the exam or no later than 2 weeks after receiving the article, the student submits a written Preliminary Exam Critique Report (and a clean copy of the paper and any supplementary information) to each committee member. **Please note that failure to turn these in on time will constitute an automatic failure of the prelim exam and will trigger a re-take the following quarter.** The requirements for Preliminary Exam Critique Report are:
- The main body of the document **must not exceed five pages**. The main body includes the narrative, figures, equations, tables, and results of calculations. References (which should absolutely be included) and Appendices are not included in the page limit. Appendices may include a statement of help received, lengthy calculations or data, or non-essential figures. Any information or details that are essential for your analysis must be in the main body.
 - Use a narrative format (bulleted or numbered lists may be included but should not be used exclusively). Use single spacing. Margins should be 1 inch on all sides. Pages and figures are to be numbered. Font size should be Times New Roman 11 pt.
 - Analyze the article; do not summarize it. Note the significance of its contribution(s) to the literature (if any). Identify specific strengths and weaknesses. Support your analysis with sound logic, literature references, data, and/or calculations.
 - You may ask anyone for general guidance regarding expectations, but you must prepare the written and oral reports without technical or editorial assistance. For example, discussion of the paper with fellow students, editorial proofreading, correspondence with the paper's authors, and a practice run of the oral presentation to your research group are prohibited. If in doubt regarding the extent of help allowed, consult the GPC. You must prepare for the preliminary exam according to the highest standards of academic honesty. This means everything you prepare must be your own work. Document all help received in an appendix to the critique (if none, say so).
 - An **insightful critique of the paper is necessary but not sufficient**. Your committee will expect you to demonstrate in-depth knowledge of all fundamentals related to the paper, especially during the oral presentation. Expect questions that probe your knowledge of fundamentals and the logic behind your analysis. Prepare accordingly!

- (h) One week prior to the exam, the student also submits to each committee member a written summary of the progress achieved to date. This written summary should include:
- A rationale for the research, a brief description of the methodology, results, discussion, and conclusions.
 - A brief (one-page maximum) discussion of research plans.
 - For the progress summary, rules regarding format and length are as for the article critique (see “g” above).
 - We expect you to discuss ongoing research with your advisor and others, but you must prepare the research report unaided, and no one may review it before you submit it.
- (i) The exam, which should be scheduled for two hours maximum, consists of two parts:
- An oral presentation by the student of her/his critique, followed by committee questions on the critique and scientific and engineering fundamentals related to the paper. The student should expect to present her/his critique for 15 minutes and the committee is expected to spend 45 minutes asking questions that probe the student’s understanding of fundamentals related to the paper and the logic behind the student’s analysis. Use appropriate visual aids (presentation slides, etc.).
 - An oral presentation by the student of his/her research, followed by questions from the committee that probe the student’s (1) understanding of fundamentals related to his/her research, (2) ability to correctly interpret and analyze the data, (3) knowledge of the related literature, and (4) the logic behind the analysis. The student should plan to present for 25 minutes (assuming no interruptions) and for a question-and-answer part that will last approximately 35 minutes. The student should be prepared to give prompt, correct, and concise answers to the questions.
- (j) To conclude the exam, the committee excuses the student and discusses the outcome. The committee agrees and assigns one of the following scores: Does Not Meet standard (DNM), Meets Standard (MS) or Exceeds Standard (ES) score and supporting written commentary for each of the following performance categories:
- Knowledge of scientific and engineering fundamentals
 - Paper Critique
 - Research Goals/Plans
 - Research Progress
 - Communication Skills
- (k) The committee recommends one of the following:
- Pass – Indicates that the student has good knowledge of fundamentals, is on track to correctly and critically analyze research results, and has demonstrated to ability to make independent progress. This outcome corresponds to scores of at least G (Good) in each of the six performance categories above.
 - Fail – Indicates a critical deficiency. If a student receives a score of DNM in one or more areas of the exam, the committee will recommend failure. The student is deemed to have made unsatisfactory progress, and the Department’s *obligation* of financial support will terminate at the end of the sixth quarter. However, if the Committee wishes, the student may be encouraged to finish with a terminal thesis or non-thesis MS. Any finding of academic dishonesty will result in a failing grade.
 - If a student fails the exam, the student may retake it again during the quarter following the failure. The deadline for the re-take is the end of the sixth week of the relevant quarter (In most cases, this will be the end of the sixth week of the student’s sixth quarter, *i.e.*, the winter quarter of the second year). A student who fails the exam twice will not be allowed to continue in the program beyond the completion of a master's degree.
- (l) The Research Advisor meets with the student immediately following the exam to convey the committee’s recommendation. **Note: this is just the recommendation of the committee. It is not the official outcome of the Preliminary Exam.** The ChemE faculty will discuss the committee’s

recommendation and agree on an appropriate outcome for the exam. The student will be informed of the faculty's decision by the end of the quarter.

- (m) The Research Advisor prepares a written evaluation report (the ratings and comments from the committee based on the performance categories outlined above). It must be approved by the other committee members and sent to the student within one week after the exam. The advisor also sends a copy to the GPA. This serves as the official record that the exam has taken place.
- (n) The student has the option to submit a written statement to the GPA, which will be filed for consideration when the faculty reviews the case.
- (o) Prior to the end of the quarter, the ChemE Faculty meets to review the Preliminary Exam outcomes.
- (p) A week in advance of this meeting, the GPA verifies that all evaluation reports have been submitted and distributes them to the faculty.
- (q) During the meeting, the faculty agree upon an outcome for each case.
- (r) The Department Chair informs each student of the *official outcome*.
- (s) A Faculty vote of "Fail" constitutes unsatisfactory progress toward the Ph.D., in which case the Department's financial support *obligation* terminates at the end of the next (sixth) quarter.

5. Completing the Master's Requirement

Students are required to complete a Master of Science in Chemical Engineering in route to the Ph.D. The MS degree should be completed before taking the General Exam but after the Preliminary Exam (this is true whether the prelim is taken and passed or taken and failed). Most students elect to complete the non-thesis option unless a thesis Master's is required by the Supervisory Committee. Note:

- (a) All requirements (see section IV.A.4 above) must be completed before the student takes the general exam.
- (b) The student applies for the degree using the Graduate School's Master's Degree Request webpage that is part of MyGrad Program. *Note: there are deadlines which you must adhere to when submitting your request for a Master's degree, please read the information at this link carefully.*
- (c) The student submits either a written project report (non-thesis MS option) or a draft of their M.S. thesis (thesis MS option) to the advisor at least two weeks prior to the scheduled exam date. The ideal report or thesis should describe successful completion of a significant research task, but every report should at least describe progress to date. A paper for publication (in draft or final form) is encouraged and can be substituted for the report (non-thesis MS option only).
- (d) For a non-thesis MS, the advisor should send an email to the GPC and GPA informing them that the student has passed the written and oral components and made satisfactory progress on their research. The GPA will route the MS warrant for signatures, and then convey the decision/outcome to the Graduate School.
- (e) For a thesis-MS, the student must: (1) have at least 9 credits of ChemE 700 (Master's Thesis research credits); (2) pass a Master's Degree Final Exam, and (3) submit a Master's Thesis. The Supervisory Committee for this exam must consist of at least 2 members. You should consult with the Supervisory Committee, set a date for the MS Defense.

6. Tracking post-M.S. progress

Between the MS and the General Exam, the student must report on their research progress at least once every six months. The General Exam may serve as one of these, and should take place during the third year. Thereafter, the student must report on their research progress at least once per year. If the Research Advisor deems that progress has been unsatisfactory, the student is placed on probation and must correct deficiencies (to the Supervisory Committee's satisfaction) within one quarter. Otherwise, the advisor's and Department's financial support obligations terminate.

7. General Exam and Candidate Status

The General Exam gauges whether or not you are making satisfactory progress toward your dissertation. Passing the exam requires the student to: (1) ***demonstrate a track record of successful research progress*** and (2) ***propose the details and timeline of how they will finish their doctoral research***. Please consult with your Research Advisor and the Supervisory Committee for specific expectations. The General Exam must be taken before the end of the third year of study. The requirements and procedures for the exam are as follows:

- (a) Finalize your Supervisory Committee members. These may be different from the committee members who oversaw your Preliminary Exam. Communicate the members of your final committee to the GPA. The GPA will communicate this information to the Graduate School. You and the Supervisory Committee members will receive an email indicating the committee has been established.
- (b) Discuss your research progress with your Research Advisor, and first obtain their approval to attempt the exam. Next, consult with all members of your Supervisory Committee. All members must agree that the student's background of study and preparation is sufficient and have approved the student to schedule a General Examination. If all members agree, then establish a date and time.
- (c) At least four members of the Supervisory Committee must attend (including the chair, the GSR, and one other Graduate Faculty member). Please note that the Graduate School has specific rules for [Video Conferencing](#) and how to proceed [if a Supervisory Committee member does not show up](#).
- (d) At least 3 weeks prior to the exam, make a request to schedule the General Exam through [MyGrad Program](#).
- (e) At least 2 weeks prior to the exam, submit a written proposal describing progress to date and your plans to complete the dissertation to each member of your Supervisory Committee. Your advisor will provide guidance on format and content.
- (f) 1 week prior to the exam, remind your committee members of the date, time, and location. Email is okay, but if you do not get a prompt response, follow-up with phone and/or personal contact.
- (g) A few days before the exam, verify that the GPA has placed the warrant (which must be signed after the exam) in your file (Note that while there was previously a separate GSR form, the graduate school discontinued this in 2019. The GRS is now simply supposed to make a report to the Graduate School if they observe an irregularity in your exam.) Your committee chair must bring these to the exam. If the warrant isn't available at the beginning of the exam, the GSR will not allow it to go forward. Your committee chair should bring it to the exam along with your transcript records.
- (h) During the exam, you will give an oral presentation of your proposal. Ask your advisor for guidance on format and content. The committee will ask questions. After this, you will be dismissed and the committee will discuss your performance. They will indicate the final outcome on the warrant.
- (i) If the General Examination is satisfactory, the Supervisory Committee members who participate at the examination sign the warrant and return it to the GPA. If an examination is unsatisfactory, the Supervisory Committee may recommend that the Dean of the Graduate School permit up to a maximum

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of two additional reexaminations after a period of additional study. Any members of a supervisory committee who do not agree with the majority opinion are encouraged to submit a minority report to the Dean of the Graduate School.

- (j) When the Graduate School approves candidacy, the student is designated as a candidate for the appropriate doctoral degree and is awarded a candidate certificate. After achieving candidate status, a student ordinarily devotes his or her time primarily to the completion of research, writing of the dissertation, and preparation for the Final Examination.

Make sure to read the [Doctoral Degree Policies for the General Examination](#) page from the Graduate School.

8. The Dissertation

The *dissertation* records your original doctoral research. Its preparation is entirely your responsibility. The Graduate School has strict requirements for the dissertation format and submission. All theses and dissertations are submitted electronically following specific *processes and policies* outlined in the Be sure you review these requirements well ahead of time so that you do not hit any barriers at the last minute. You should plan to present a copy of your dissertation to your Supervisory Committee at least two weeks prior to your Final Exam.

9. Final Exam (the PhD Defense)

The final exam is an oral defense of the dissertation. You present your main accomplishments in a seminar to a general audience, after which the Supervisory Committee questions you on the dissertation's content. The requirements and procedures for the exam are as follows:

- (a) ***One year prior to the Final Exam, complete the general exam.*** It is possible to petition the GPC for a waiver. However, approving such a request will require first the approval of the Research Advisor and the presence of significant extenuating circumstances that are out of the student's control.
- (b) If you plan to defend early in a quarter, this can create issues around payroll. Please consult with the fiscal office to determine whether your date of separation will cause such issues.
- (c) Discuss your research progress with your Research Advisor, and first obtain their approval to attempt the Final Exam. Discuss the composition of the Doctoral Reading Committee with your Research Advisor. The Doctoral Reading Committee must be composed of the Chair of the Supervisory Committee (typically the Research Advisor) and two other members of the Supervisory Committee. The Reading Committee is appointed to read and approve the dissertation. It is the responsibility of the Reading Committee to: (1) ensure that the dissertation is a significant contribution to knowledge and is an acceptable piece of scholarly writing; (2) determine the appropriateness of a candidate's dissertation as a basis for issuing a warrant for a Final Examination and; (3) approve a candidate's dissertation.
- (d) After the General Exam, but no later than five weeks prior to the Final Exam, the student must notify the GPA of their requested Doctoral Reading Committee. In consultation with the GPC, the GPA uses [MyGrad Program](#) to inform the Graduate School of the composition of the Doctoral Reading Committee.
- (e) A Final Examination may be scheduled if: (1) the Reading Committee is officially established with the Graduate School; (2) the Reading Committee has read an entire draft of the dissertation and; (3) the entire supervisory committee has agreed that the student is prepared and has approved the student to schedule a Final Examination. At least four members of a supervisory committee (including the Chair, the GSR, and one additional Graduate Faculty member) must be present at the examination. Please note

that the Graduate School has specific rules for [Video Conferencing](#) and how to proceed [if a Supervisory Committee member does not show up](#).

- (f) At least 3 weeks prior to the Final Exam, make a request to schedule the Final Exam through [MyGrad Program](#).
- (g) At least 2 weeks prior to the exam, submit a copy of your dissertation to each member of your Supervisory Committee.
- (h) 2 weeks before the exam, provide a brief abstract (about half a page) to Allison Sherrill (sherra@uw.edu, BNS 251). She will produce and distribute the examination announcement.
- (i) 1 week prior to the exam, remind your committee members of the date, time, and location. Email is okay, but if you do not get a prompt response, follow-up with phone and/or personal contact.
- (j) A few days before the exam, verify that the GPA has placed the warrant (which must be signed after the exam). Your committee chair must bring this to the exam. If the warrant isn't available at the beginning of the exam, the GSR will not allow it to go forward. Your committee chair should bring it to the exam along with your transcript records.
- (k) The exam itself consists of public and private portions. The exam begins with a short private meeting where upon the Supervisory Committee discusses the Candidate's progress (transcripts, Preliminary Exam results, General Exam results, etc.). Next, the public is invited in and the candidate gives an oral presentation of their dissertation. The presentation should last no longer than 50 minutes. There will then be time for questions from the general audience. Next, the public is dismissed, and the Supervisory Committee questions the Candidate in private. After this questioning, the Candidate is dismissed and the Supervisory Committee discusses the dissertation and defense. Also, the Supervisory Committee will decide whether the dissertation requires revision. The Reading Committee's approval (prior to the exam) means that only minor changes should be needed at this point.
- (l) After the exam, the Chair returns the signed warrant to the GPA who will electronically convey the decision to the Graduate School.
- (m) Once the dissertation is in final form, ask your committee members if they would like a copy (it is your responsibility to provide all copies).
- (n) [Submit your electronic dissertation](#) as required by the Graduate School. Obtain original signatures on the Doctoral Dissertation Reading Form and return this form with original signatures to the Graduate School. Once you've applied for the Final Exam, you have until the last day of the quarter to submit your electronic thesis, and return the Doctoral Dissertation Reading form. If you are not able to make this deadline you will be required register for the next quarter.

Make sure to read the [Doctoral Degree Policies for the Final Examination](#) from the Graduate School. You must satisfy the requirements listed on the Graduate School website at the time of graduation.

V. Appendices

A. On Choosing a Research Project and Advisor

Course work and extracurricular activities are important, but for most students research determines the quality of the graduate school experience. Therefore, choosing a research advisor is probably the most important decision you will make. It's important both for you and your advisor that your choice be informed.

Some factors that you should consider are:

1. The personality and working style of the advisor.
2. The nature of the research project.
3. The research group size, makeup and resources (equipment, *etc.*).
4. The advisor's academic and scholarly reputation.
5. Advisor expectations for research productivity.
6. The project's funding stability.
7. The post-graduate careers of the advisor's former students.
8. Advice from graduate students and faculty members.

Of these, item 1 tops the list for most students. Fortunately, all students and advisors are different, and every advisor will be a good match for certain students. Moreover, most students will be compatible with more than one advisor. Some additional considerations:

9. During the course of your graduate career you will develop communication skills that are essential in any career. Does the advisor provide opportunities for poster presentations? Will you present talks at group meetings, on campus, at technical meetings, or in a journal club?
10. Companies and universities both value instructional skill. How will your advisor help you become a better teacher? Will you be mentored as a TE?
11. How will the advisor react when you are discouraged?
12. How will the advisor stretch you? Help you excel beyond your expectations?
13. How long do the advisor's students take to finish on the average?
14. Will you participate in writing research proposals (especially important for those interested in academia)?

Some students have a particular area of work in mind when they start graduate school and others do not. Experience in undergraduate chemical engineering courses may have biased you in one way or another. Graduate education is so different that these experiences seldom provide an adequate basis for choosing a research project. Thus, we strongly advise you to keep an open mind. Evaluate all available projects carefully.

If you have questions about the selection process, please feel free to ask the Graduate Program Coordinator, the ChemE Chair, or any ChemE professor.

B. Lab Safety Inspection Checklist

The Department uses the following checklist during periodic inspections to evaluate the safety of each lab. We include it here to make you aware of possible hazards in your lab.

I. RIGHT TO KNOW AND PERSONAL PROTECTION (Please check (√) answer)

- | | | |
|--|-----|----|
| 1. Is a lab map showing the location of safety book, spill kits and ventilation systems displayed in a conspicuous area? | Yes | No |
| 2. Is the "Emergency response guide" posted conspicuously? | Yes | No |
| 3. Is the "Emergency telephone numbers" sheet posted conspicuously near the phone? | Yes | No |
| 4. Is the Safety Book location obvious and known by lab occupants? | Yes | No |
| 5. Are SOPs available for each chemical? | Yes | No |
| 6. Is the reading of SOPs documented? | Yes | No |
| 7. Is there a system for SOPs update? | Yes | No |
| 8. Are spill kits easily accessible and properly stocked? | Yes | No |
| 9. Is personal protection equipment (lab coats, gloves, goggles, aprons, UV glasses and shields, face shields, laser glasses, ear muffs, respirators) available and stored in a designated area? | Yes | No |
| 10. Has the personnel been trained in the proper use of the safety (e.g. equipment respirators)? | Yes | No |
| 11. Are appropriate signs posted (e.g. laser, hot surface, wear goggles...)? | Yes | No |
| 12. Does the personnel know the location of fire extinguishers? Are they charged? | Yes | No |
| 13. Does the personnel know the location of safety showers and eyewashes?
Is this equipment operational? | Yes | No |
| 14. Are the personnel aware of "sharps" regulations? | Yes | No |
| 15. Are the personnel aware of "hazardous waste" regulations? | Yes | No |

II. CHEMICAL INVENTORY AND STORAGE

- | | | |
|--|-----|----|
| 1. Does the personnel have access to LSS? | Yes | No |
| 2. Does the personnel know how to use LSS? | Yes | No |
| 3. Are new chemicals entered on LSS as they are delivered? | Yes | No |

4. Is there a system for LSS update?	Yes	No
5. Are chemicals stored on shelves with lipped edges?	Yes	No
6. Are all chemicals labeled?	Yes	No
7. Are chemicals labeled with the proper inventory adhesive dot?	Yes	No
8. Are chemicals dated?	Yes	No
9. Are chemicals properly stored?	Yes	No
10. Are acid and bases segregated?	Yes	No
11. Are reactive chemicals stored under appropriate conditions?	Yes	No
12. Are toxic or carcinogenic chemicals stored under appropriate conditions?	Yes	No
13. Are flammable chemicals stored under appropriate conditions?	Yes	No
14. Are gas cylinders properly secured to prevent them from being knocked over?	Yes	No
15. Are specifically designed carts used for the transport of gas cylinders (e.g. liquid nitrogen)?	Yes	No
16. Are dangerous compressed gases stored and used with appropriate ventilation?	Yes	No
17. Are used chemicals or mixes properly disposed of?	Yes	No
18. Are waste chemical containers properly labeled with "Hazardous Waste" tag?	Yes	No

III. LABORATORY AND EQUIPMENT

1. Is food prepared, stored or consumed in the laboratory?	Yes	No
2. Are all microwave, refrigerators, freezers and cryogenic units labeled with "No Food or Drinks" tags?	Yes	No
3. Is the general laboratory set-up appropriate for an emergency evacuation?	Yes	No
4. Are the aisles blocked by equipment, boxes...?	Yes	No
5. Are freestanding shelves and cabinets secured to the walls?	Yes	No
6. Are fire escape hatches blocked?	Yes	No
7. Is general housekeeping satisfactory?	Yes	No
8. Are sharp objects lying around?	Yes	No

9. Are sharps properly disposed of?	Yes	No
10. Are Bunsen burners supplied with gas using black vacuum tubing?	Yes	No
11. Are equipment electrical cords in good condition?	Yes	No
12. Are extension cords on the floor?	Yes	No
13. Are "High Voltage" signs posted where appropriate?	Yes	No
14. Are precautions taken with liquid streams to prevent short circuits?	Yes	No
15. Are heavy objects stored on lower shelves?	Yes	No
16. Are precautions taken to prevent accidents with equipment containing moving parts?	Yes	No
17. Are transmission belts and chains (e.g. on vacuum pumps) guarded and in good condition?	Yes	No
18. Are hood sashes kept below the "100 fpm face velocity with sash at this line" tag?	Yes	No
19. Is rarely used equipment stored permanently under the hoods?	Yes	No
20. Is equipment blocking the airflow to the hood exhaust?	Yes	No